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Contents

Pages

Editorial : Post Platinum Jubilee Seminar

Towards The Goal of Sustainable Human Development : An Anthropological Perspective 1
Sudhendu Mukherjee

Aspects of Dongria Kondh Kinship 7
N. K. Behura

Toto is not a Vanishing Tribe but at the Cross Roads 21
Manibrata Bhattacharya

Agricultural Modernization and Environment : Some Reflections on Dilemmas of Development 29
Rajatsubhra Mukhopadhyay

Principles of Folk Taxonomy : Environment and Empiricism 37
Soma Bandyopadhyay and Syamalkanti Sengupta

Environment Conservation and Tribal Development 47
Amal K. Das

A Study on Brass Working Communities in Pallahara Region : An Anthropo-archaeological Approac51
Ranjana Ray, Sharmila Majumdar, Sutapa Ghosh and Sutapa Mukhopadhyay

Role of Anthropologists in Environment Education 61
Usha Deka

List of Contributors and addresses 67

EDITORIAL

The Department of Anthropology was established in 1920 by Sir Asutosh Mukherjee to whose genius indeed Post graduate research work in Calcutta University owes its inception. At the time of formative period Rao Bahadur L. Anantha Krishna Iyer, Roy Bahadur Gupte, Dr. P. Mitra, Dr. A. N. Chatterjee were the staff members of this Department. In 1921 eminent scholars like Sri H. C. Chakladar, Sri T. C. Das and latter on Sri T. C. Roychoudhuri, Captain R. N. Basu, Prof. K. P. Chattopadhyay, Sri N. K. Bose, Sri M. N. Basu, Dr. J. K. Bose, Sri D. Sen strengthened the teaching chairs of this Department. After a few years Dr. P. C. Biswas, Dr. S. S. Sarkar, Sri G. S. Ray, Dr. M. L. Chakraborty and later Sri H. K. Bose and Dr. S. K. Bose joined the Department. Though initially the research work was confined to ethnography but latter on the topics of researches broke a lot of boundaries and the students, this department produced, brought Anthropology in almost all aspects of researches in modern societies, primitive cultures and contemporary societies. Presently the students of this department are getting recognition for their research content in all over the country and abroad. The training given by this Department and its practical value in planning and welfare work has been recognized by several Departments of the Government. The students have been and are getting absorbed as officers in many Government and Non-governmental organizations.

An year or more four of our teachers of recent decade Dr. Tulika Sen, Prof. P. K. Bhowmik, Prof. A. R. Banerjee and Prof. D. P. Mukherjee retired from their formal services to the Department. An erudite scholar and devoted teacher Prof. Asoke K. Ghosh suddenly died of cerebral attack on 13th of April 1997 nearly after a month of celebration of Platinum Jubilee Seminar in the Department. He acted as an adviser to the members of the organizing committee for Platinum Jubilee Seminar held on 8-9 March 1997. This Department with its members of teaching staff, office staff, scholars and students condoled his sudden demise as a matter of great loss to the Department and Anthropology in particular.

The existing teachers Sri B. N. Banerjee, Dr. S. K. Sengupta, Dr. M. Bhattacharjee, Dr. (Mrs.) R. Ray, Dr. A. B. Das Choudhuri and Prof. B. Chaudhuri are teaching adequately and comprehensively the specialized areas of Anthropology of global interest. The Department of Anthropology observed Platinum Jubilee through celebration of post Platinum Jubilee Seminar on Man and environment : perspectives on fundamental and developmental researches during 8-9 March 1997. On the occasion resource persons like Prof. N. K. Behura, Prof. G. C. Mohapatra, Prof. D. K. Bhattacharjee, Prof. M. R. Chakraborty, Prof. V. Karuppaiyan and Prof. Y. C. Simhadri were in deliberation. The seminar was inaugurated by an eminent scholar in Economics Prof. P. N. Roy, Pro-Vice-Chancellor (academic), C. U. Besides the Dean of the Faculty of Science, Prof. A. B. Banerjee, and Prof. I. P. Singh, Prof. K. Gurumurthy graced the occasion.

There were six scientific sessions. Each session was dedicated to the memory of six eminent teachers of the Department of Anthropology, Calcutta University namely Prof. K. P. Chattopadhyay, Dharanidhar Sen, T. C. Roychoudhuri, S. S. Sarkar, T. C. Das and M. N. Basu. There were six Memorial Lectures presented at the beginning of each scientific session by six prominent anthropologists of India. They were Dr. Sudhendu Mukherjee, Prof. D. K. Bhattacharjee, Prof. Usha Deka, Prof. M. R. Chakraborty, Prof. N. K. Behura and Prof. A. K. Danda. Dr. S. K. Sengupta, Head of the Department of Anthropology, the convenor of the Seminar in his welcome address pointed out the contributions of the teachers of past and present. The Pro-Vice-Chancellor (academic) on request of the Head of the Depatment presented six memorial plaques as token of recognition and contribution of the invited speakers of Memorial lectures in the field of anthropology. Six departmental teachers also received plaques in recognition of their committed and continuous service to the Department.

In his inaugural address Prof. P. N. Roy touched upon various issues of teaching and research in general and the problems confronting the teaching community. As an economist he felt the necessity of close interaction between anthropologists and economists. He felt the necessity of adopting an ethical code by the professional anthropologists. He also was in favour of maintaining a balance between research and teaching. Prof. I. P. Singh in his address hinted at the leading role played by the University of Calcutta and its Department of Anthropology in the specialized field of education. He mentioned that the teachers of this Department of Anthropology founded Anthropology Department in other Universities. Too much load is taken by the existing six teachers. Singh indicated his favour in holistic appraoch in Anthropology. He also pointed out that this Department in its focus on fundamental research also had been laying equal importance to applied research. Prof. K. G. Gurumurthy highly appreciated the activities of the Department of Anthropology, Calcutta University and compared its activities with other Anthropology departments of India to indicate its leading areas in many respects. He mentioned about the library of the Department where rare books and journals were preserved and he pointed out that in no other library such rare books could be available in India. Prof. A. B. Banerjee, Chairman of the inaugural session, drew the attention of the learned audience to the issues of over exploitation of environment. He cited examples from Nigeria.

The first session was dedicated to the memory of Prof. K. P. Chattopadhyay. Dr. Sudhendu Mukherjee delivered lecture on Development of Sustainable global human settlement. Prof. Chattopadhyay had association with Netaji Subhas Chandra Bose, Dilip Kumar Roy, Prof. P. C. Mohalanobish and other outstanding personalities. In his Memorial lecture focus was made on various aspects of global ecological disorder, drug addiction, AIDS, military invasion, rights of indigenous population, crisis in biodiversity and sustainable human development. The idea was nurtured that the anthropologists seldom raised questions on these issues in contemporary times. The anthropologists are very much aware of these crisis and cultural conflicts. The crisis in civilization is very much in existence now and anthropologists in many parts of the globe are working on sustainable human settlement. There were five papers in this session highlighting the changing areas of Oraon womanhood in terms of indices of human resource development; examining issues under environment-development debate in the context of agricultural modernization in India; non achievement of the socio-economic target by the scheduled tribes; socio-economic condition in relation to fertility, mortality of Muslim population; and world view of major religious specially of Islam in the context of man-environment relation and modern-traditional knowledge.

The second session was dedicated to Prof. Dharanidhar Sen. Prof. D. K. Bhattacharjee of Delhi University delivered the Memorial lecture on Ecology culture and development. It was a fascinating talk hinting at different areas of fundamental research and application in development perspective. He felt the necessity of the spread of environmental education in general as a part of under graduate education. Prof. Bhattacharjee was of opinion that human interference had been genetically changing the components of environment which had no selective advantage.

His talk was followed by presentation of four papers indicating that protection and improvement of environment would largely depend on ameliorating the economic condition of the tribals by involving them as active partners in various forest operations; emerging problems of shrimp industry on the coastal areas of peninsular India urging upon the development anthropologists to find out solutions to check the pollutions; a tribe of Uttar Pradesh and their relationship with the forest pointing out the adaptive codification of their belief system; and ethnohistory of brass working community living in Pallahara region of Orissa.

The third scientific session was dedicated to the memory of Prof. T. C. Roychoudhuri. The lecture was prepared by Prof. Usha Deka. In her absence Prof. A. K. Ghosh kindly read the Memorial Lecture entitled Role of anthropologist's in environment. Necessity of environment education of the mass for checking pollution was highlighted. She emphasized on the eco-friendly development projects. Four papers were presented in this session which indicated the nature of bio diversity and conservation problems; the hierarchical classification of Haku (fish) based on morphological features through contrasting sets of response along with habitat and locomotion; the concept of man and environment relationship in anthropology and the need of multi-disciplinary approach and an association with HP+IS allele frequency in blood group O in comparison to that of other ABO blood group combined in Bengalee caste Hindu population.

Fourth session was dedicated to the memory of Dr. S. S. Sarkar. Professor Manish Ranjan Chakraborti kindly delivered the memorial lecture entitled Research Priority in Environmental and developmental Anthroplogy. His lecture supported by data clearly brought the fallacy of Indian planning. The existing situations and commitments are diametrically opposite and contradictory in measure. He traced the importance of studying health and nutrition of population living in varied ecological constrains particularly in tracing importance of assessing the influence of environment of food, water, health and fertility behaviour.

Five papers were presented in this session. This session was dedicated to the memory of Prof. T. C. Das. Dr. S. K. Sengupta expressed that Das was a dedicated teacher in Anthropology who developed a very systematic way of training the students for field work.

Prof. N. K. Behura delivered the T. C. Das memorial lecture. He had chosen the theme of Kinship as it is a universal phenomena. Citing various examples, Prof. Behura gave an account of how kinship system evolved with the advancement of human society. He presented a profile of Dongria life and environment.

This memorial lecture was followed by presentation of four papers mainly looking into the rapid progress of culture itself and the destruction of living organisms; critical evaluation of deforestration and reforestration in India; examining the views pertaining to 'environmental determinism' and 'environmental possibilities, which influenced the understanding of man environment relationship and an outlines of finger ridge minutae.

The sixth session was dedicated to the memory of Prof. M. N. Basu. Prof. A. K. Ghosh as an admirer an close associate to Prof. M. N. Basu presented some outstanding characteristics of his teacher specially his love for students.

Prof. A. K. Danda paying high tribute to Prof. M. N. Basu, presented a talk on 'Ethnicity embracing various facts of life and environment' which has already been and becoming a trend of research in Indian Social Anthropology.

Three papers were presented in this session. The first one was on Folk taxonomy, environment and empiricism by Dr. Syamalkanti Sengupta and Smt. Soma Bandyopadhyay. The authors' intention was to throw some light on the perception of the Santal community residing in a given environment and the plant, animal taxa around them. In second paper of prof. Ghosh and Subhra Bhattacherjee justification on the dependence of man both on environment and forages undergo thorough changes with diverse forms of behavioural compromise was attempted at. In the last one Sri Aniruddha Chakraborty made an attempt to examine the factor responsible for process of peasantization among the Birhor.

The Chairperson requested Prof. Simhadri of Sociology Department, Andhra University to make a brief presentation on the subject of the Seminar. Prof. Simhadri briefly stated the importance of creating a healthy environment free from pollution for a happy and prosperous life.

This Department of Anthropology is indebted to University Grants Commission for providing the fund for Post Platinum Jubilee Seminar and for Resource Persons through Departmental Special Assistance (DSA) Programme.

Syamalkanti Sengupta

Towards The Goal Of Sustainable Human Development : An Anthropological Perspective.

SUDHENDU MUKHERJEE

Abstract : Human civilization has been encompassed by the wonders of atomic and nuclear energy, micro software computers, sattelite, television relays, space technology combined with the prospects of genetic engineering and biotechnology. The western liberalization camoufläged under the hidden threat of nuclear arsenal is about to enter in rich flora and fauna of India and its resources in agriculture. We want all animals and plants to survive and grow but we seldom put importance to protect human population. We need to clean polluted soil, water, air of entire globe, we need massive afforestation, to fight against hunger, to produce food and shelter. Would anthropologists come out of their self made inferno to lead human destiny to survival in 21st Century?

It is indeed a great honour to speak before you in a Seminar, organised in the memory of Late Prof. K.P. Chattopadhyay, along with others, who was a versatile genius, though mainly known as a celebrated Anthropologist. Like many others, I was also one of his students and certainly not in any way remarkable. But I have the privilege to know him as a Great Patriot, who was a colleague of Netaji Bose and the Singer Dilip Roy from the Presidency to the Cambridge days—Bose, Roy and Chattopadhyay were known as 'Trayee' (Trio). I have seen tears in his eyes when Netaji's death was flashed by Reuter in August, 1995. Prof. Chattopadhyay also assisted Gandhiji in drawing up courses on 'Nai Taleem' or Wardha Scheme of Education. His work as a disciple of Deshbandhu Das in promoting free primary education for Slum Children in Calcutta in the early twenties was another landmark. He also mediated in the famous political fracus between Subhas and Sengupta. During the '42 August Movement, Prof. Chattopadhyay also acted as the President of Nadia District Congress Committee. As a descendant of Vidyasagar, he also guided the activities of Vidyasagar College, Annuity funds for widows, supervised widows, Hostel and various other welfare activities. Along side, he headed the Civil Liberties Movement for the release of Political Prisoners in Bengal for a long time. He was a staunch supporter of the Communist Movement for which his wife and sons suffered political imprisonment and harassment. Even in England during his student-days, he worked in the Trade Union movement of Indian sailors in the London Docks.

His memorable service to the victims of the Bengal Famine of 1943 as a leader of the Peoples' Relief Committee and his studies, alongwith Prof. P.C. Maholanobis on the socio-economic causes of the Bengal Famine provided a smart reply to the malicious machinations to hide real facts by L. A. S. Amery, the then Secretary of State for India and a stooge of the notorious Winston Churchill, the Imperial Prime Minister Of Great Britain who threw all our National Leaders behind prison bars and pillaged India during the '42 August Rebellion and thereafter. After Independence, in the fifties Prof. Chattopadhyay was deeply involved in the Leftist political movement, when he also served as a member of the West Bengal Legislative Council as an M. L. C. I would rather stop here reflecting about my deep memories of my teacher, and would refrain from commenting on his Anthropological wisdom, as I am perhaps incompetent to do that. But I cannot resist my temptation to refer to his superb mathematical analysis of marriage classes and the associated kinship system that prevailed in

Ambrym Islands, Australia and other Pacific Islands. One should also refer to his classical studies on NeWar Society in Nepal and various tribal monographs on the Santals, Hos, Khasis, Gonds, Korkus, etc.

To the present generation, the above list of Prof. Chattopadhyay's involments and achievements may not matter, but to us, these are unforgettable memories. He also saved me from the clutches of police in a superb and clever manner right within this Department, when the Central CID were hounding for my arrest. I also had the privilege of working under him on the problem of Juvenile Delinquency in Calcutta. I still remember his resonent voice in the last day of in the last day of our M. Sc. class, when he summarised Rivers' entire book on Social Organisation in 2 hours and Prof. Madhab Goswamy of Guwahati University and my classmate, exclaimed "What a splendid brilliance": That was perhaps a reflection of Indian academic and political culture of the period between forties to fifties and sixties.

To-day, these memories of Freedom struggle have totally faded out and been replaced by endless stories of political corruption, invasion of alien culture through electronic media, alongwith equally horrifying stories about "population explosion", military conflicts and nuclear tests, ecological crises and ethnic violence and social disorders all over the globe.

Ideological goals seem to have been shattered in the vortex of military jingoism, mind-boggling penetration of multinational economic sharks and monopolies which have nearly paralysed the cultural fabric of human civilization by introduction of obscure threats of AIDS, Drugs, Sex-Tourism, sandwiched between equally horrifying issues of Global Ecological disorder, Global Trade and liberalisation, notwithstanding the Global Lamentations over Rights of Children, Rights of Women, Rights of Indigenous Peoples, crowned with frantic cries about Human Rights. But, at the same time, in the last 50 years or so, Science and Technology have delivered Wonders, which be-wildered Human Civilization to-day in a fantastic splendour, overshadowing the magnitude and glories of all earlier scientific discoveries for hundreds of years, opening up fabulous possibilities of the growth of human ingenuity, creativity and culture in all fields. If Science and technology can spell wonders of fathomless creativity, then why we are crying hoarse about "end of history" (Fukuyama) or loosing our nerves by the cynic prophecies about Deconstruction by Derrida? Science gives us new hopes, but societal maladies make us either cultural maniacs or dwarfs or even stoies.

It may be pertinent to refer here to the UN Habitat-II (Istambul) call for "adequate shelter for all" and "sustainable human settlements development in an Urbanising World" which are issues of immense importance to all Anthropologists. I had the privilege to attend this UN Habitat-II Conference at Istambul in June, 1996 and I also attended UN Habitat-I Conference at Vancouver in June, 1976. It will be of use to quote from the official UN declaration. "We recognoze the imperative need to improve the quality of human settlements, which profoundly affects the daily lives and well-being of our people. There is a sense of great opportunity and hope that a New World can be built, in which economic development, social development and environmental protection as interdependent and mutually reinforcing components of sustainbale development can be realised through solidarity and co-operation within and between countries and through effective partnerships at all levels".

"International co-operation and Universal solidarity, guided by the purposes and principles of the Charter of the United Nations, and in a spint of partnership are crucial in order to improve the quality of life of the peoples of the World, when 1 billion people just survive without decent living conditions. Our objective is to achieve adequate shelter for all, especially the deprived urban and rural poor through an enabling approach to the development and improvement of shelter that is environmentally sound".

As to the first theme, a large segment of the World's population lacks shelter and sanitation, particularly in developing countries. We recognise that (the right to adequate housing, which includes) access to safe and healthy shelter and basic services, is essential to a person's physical, psychological, social and economic well-being and should be a fundamental part of our urgent actions for the more than one billion people.

As the second theme, sustainable development of human settlements combines economic development, social development and environmental protection, with full respect for all human rights and fundamental freedoms, including the right to development and offers a means of achieving a World of greater stability and peace, built on ethical and spiritual vision. Democracy, and transparent, representative and accountable governance and administration in all sectors of society are indispensable foundation for the realisation of sustainable development. However, the lack of development and the existence of widespread absolute poverty inhibit the full and effective enjoyment of human rights and render fragile democracy and popular participation.

The purpose of the Second United Nations Conference on Human Settlements (Habitat-II) is to address two themes of equal global importance : "Adequate shelter for all" and "sustainable human settlements development In an Urbanising World". Human beings are at the Centre of Concerns for sustainable development, including adequate shelter for all and sustainable human settlements and they are entitled to healthy and productive life in harmony with nature [United Nations Conference on Human Settlements, (Habit at II, Istambul, Turkey, 3-14 June 1996)].

The United Nations have a membership of about 180 countries of Nations or Societies, begining from the giant populous Countries like China and India to highly industrialised small nations like Japan, England, France, Germany, Italy and others down to the small islandic countries in the Pacific and Atlantic Oceans, who have a population of a few millions or less than a million or even of few thousands like those in Solomon Islands, Marshall Islands or in the New Hebrides. If we count the number of smaller ethnic groups in each of these countries, we come up with a much wider mosaic of social, ethnic or caste groups, like the Kurds in Turkey, Iran and Iraq, Tajiks and Pakhtoons in Afghanistan, or those dozens of ethnic groups in North-East India or in Burma or the Tutsis and Hutus in Rwuanda - Burundi and similar such groups and sub-groups all over the World and neither England, USA or Canada are 'bereft' of such smaller ethnic groups, who are oppressed, neglected or even eliminated, like the fate of American Indians.

In such a complex situation, are we really serious about our preception and wisdfom of Bio-Diversity or sustainable human development? There is a World-wide concern and legitimate anxiety to preserve or conserve all animals and plants - from lions, tigers, snakes, crocodiles to leaches, earthworms, cockroaches, all microbes and all varieties of big and small plants including Algae, Ferns, and mosses. We all understand the logic and significance of such concerns, but why do we become indifferent, callous or are criminally obssessed with mass killings of human beings in worse ethnic or political conflicts or in natural calamities or in hunger and privation? Food and relief materials can be rushed to any place of the Globe within a few hours, but such superfast aircrafts or submarines are scourging our skies and oceans 24 hours with nuclear war-heads, about which we are criminally indifferent, but we all gloat about Bid-diversity and sustainable human development. Sustainability for nearly six or seven thousand million human beings, divided in 180 old country or nations, which are further sub-divided into thousands of ethnic and other cohesive social groups, legitimately brings up all parameters of social, economic and political consideration. While the Zoologists and Botanists do care about maintaining a taxonomic record at all plant and animal species, Anthropologists hardly care to maintain such records of human groups and I also doubt whether they are at all aware of such myriads of social groups struggling for survival in different parts of the Globe under complex social, economic and political exigencies.

We are trying to preserve snakes, crocodiles, tigers and earthworms but do we have a blue print for the sustenance and development of all human groups? Ecologists are rightly clamouring about global warming, melting of Polar Ice-Caps. Co_2 and CFC emissions from whole range of operations under global urbanisation and industrialsation. But, we seem to be totally callous about the entire nuclear armament race, mass stock-piling and nuclear tests, round-the-clock Global circling of planes and subwarines with nuclear warheads under satellite control and their devastating effects on all species and on water, air and soil. To be aware, to remain alert for immediate positive action is the acid test for any question of sustanibale human development. At Istambul, the official delegate from Marshall Islands, expressed total disappointments about the effects of French nuclear testing on air, water soil and on various plants and animal species in their small island. Who maintains a total record of all nuclear testings by Britain, France and U.S.A. from 1945 onwards in all the pacific Islands (Polynesia, Micronesia, Melanesia, etc.) and their effects on the anthropological and ecological treasures preserved in these islands for thousands of years. The Anthropologists take legitimate pride in maintaining all records of palaeolithic, neolithic and post-neolithic civilisations upto the modem age but somehow or other. The Anthropologists are today shy like new-brides to have any encounter with Urban, industrial or political anthropology.

Man has learnt the techniques of survival through endless processes of food-gathering, hunting, nomadic pastoralism, argiculture and industrial production, but many of the gadgets are sometimes found superfluous or out-of-tune with times but some are definitely creative and productive, which survive beyoud times and we have to retain and conserve this rich cultural heritage. Discovery of fire, wheel, linguistic scripts, printing technology, discovery of germs and bacteria, of steam, electrical and nuclear power are all crowning successes in the onward march of human civilisation.

Human civilisation, as we are enamoured to-day by the wonders of atomic and nuclear energy, micro-software computers, Satellites, Television relays, marvels of space technology, alongwith all the prospects of genetic engineering and bio-technology for the welfare of human civilisation, bewilder us in the twilight of the 20th Century whether human society at this cross-roads? Many scientific achievements, we know, have generated many social, economic and political conflicts and sitortions, which social scientists can hardly afford to ignore. Flaunting affluence, seqandering of resources and the rackless extravagance and 'permissiveness' in the sex behaviour in the so-called First World, in their sordid drug-habits and the alarming threats of AIDS infection through perverse sex-tourism have paled into insignificance the revages and destruction that was caused by 3 or 4 centuries of Colonial exploitation and internatinal brigandage. The only difference is perhaps the partial replacement of gun-boat diplomacy and violent pillage with soft-ware techniques of electronic and satellite invasion of the new 'Global-CNN-Pornographic Culture' sandwithched with Coca-Pepsi Cola, Kentucky Fried Chicken under the garb of globalisation, privatisation and liberation. The western liberalisation, camouflaged under the hidden threat of nuclear arsenal, are about to enter not only of the rich flora and fauna of India, its fabulous resources in agriculture and the herbal culture but also in the mundane markets of Idli-Dhosha, Rice, Dal and Khichuri all under the sugar-coating of preservation of Intellectual Property Rights, Patent laws and what not. If you protest, face about nuclear destruction in Bagdad and Persian Gulf, as enacted by Bush administration in 1991, in Bagdad and Persian Gulf, when the scorched and ignited oil flow swallowed the entire, marine life of Persian Gulf and the Arabian Sea and even 'blackened' the white snows of Kashmir and the Himalayas:

We want all animals and planets to survive and grow, but are scared of human beings-yes, we need billions and billions of hands to cleanse the polluted soil, water, air of the entire globe, for massive afforestation, will to restore dried up rivers and water-bodies, to fight hunger, to produce food and shelter, to provide all basic human needs and services and not jabber about glib inuendoes about the so-called population explosion and Information Revolution when billions and billions remain illiterates and hungry, without basic amenities for human existence.

Who and how will be produce our food, build houses, maintain public Transport and other civic infrastructure? By Computers and satellites or by the hands of illiterate farmers and working populations? who would conserve our noblest human traditions of ethics, morals, religion and the rich reservoir of cultural traits? Rabindranath said "Sato Sato Shamrajyer bhagnoshes pare, Ora Kaj Kare nagare prantare".

We else but the Anthropologists who dare to trace their ancestry from the apes and who have meticulously restored every bits and pieces of our Palaeolithic, Neolithic and subsequent archaeological treasures would dominate the Centre-Stage of the Global ecological battle for sustainable human development to conserve nature, bio-diversity and cultural traits, to retain, sustain and surge ahead for more radical social changes at the same time?

Would the Anthropologists come out of their self-made inferno of bigotry and insolence to lead human destiny at the twilight of the 20th Century? Twilight of the 20th Century would brighten up the horizons of the many hundreds and thousands of centuries ahead, if we could take the right lessons of our historical past from the dawn of human civilisation, across the countries and mazes, ups and downs of human civilization, whether they are in the Palaeolithic or Neolithic stages or in the legendary heritages of ancient Egyptian, Ionian, Greek, Sumerian, Akkadia, Scythian or in Mohenjo-daro-Harappa or in the hoary past of Chinese civilisation. In ecological teminology, we talk of a Global perspective and a local Action and the Anthropologists have pierced through the structure and function of human society, whether it is in terms of the varieties of occupation or in the domain of religions, linquistic or ethnic cultures, both in the macro and micro terms. Would Anthropoligists rise to the challenges of human civilisation, yes, another during tryst with human destiny from the days of Cave-dwellers to our odyssey with super computers bio and space technology and cybernetics?

Aspects of Dongria Kondh Kinship

N. K. BEHURA

Abstract : The Dongria Kondh sub tribe though belongs to Dravidian language family the kinship does not conform to Dravidian tribes instead it conforms to the Hawaiian type. The Dongria strictly practice Kuda or clan exogamy. In Dongria kinship terminological system FaFa, FaFa Fa, Mo Fa, Mo Fa Fa are terminologically merged and are addressed as Eh tadi and referred to as tadi.

Similarly FaMo, MoMo, MoFaMo are terminologically grouped and addressed as well as referred to as Aaji

Kondh is one of the major tribes of Orissa, which belongs to the Dravidian Linguistic group. Dongria Kondh is one of the sections of sub-tribes of the Kondh tribe. The Dongrias inhabit the Niyamgiri group of hills of the Eastern ghat in the Koraput district of Orissa. Each Dongria village is situated on an undulating piece of land surrounded by hills and isolated from other villages. Though the villages are isolated from one another, the Dongrias of the Niyamgiri group of hills constitute a homogeneous population culturally. Their kinship ties bind them together into an endogamous unit.

Kinship study right from Morgan's (1871) time till today has undergone steady improvement both methodologically and analytically. Rivers (1924), Kroeber (1909), Lowie (1920), Malinowski (1962), Radcliffe-Brown (1952), Murdock (1949), Levi-Strauss (1969), Fortes (1945), Goody (1958), Needham (1971) and many others have stimulated the study of kinship in an analytical manner. A number of new directions have been added to kinship study. Some of these include cross-cultural comparisons involving statistical techniques, and others involve application of linguistic methods.

Murdock's cross-cultural study of family and kinship in 250 societies all over the world presented a new idea that the kinship terminology is determined by rules of descent and residence, with lesser importance of marriage rules. He has worked out eleven types of primary social organization, namely, Eskimo, Hawaiian, Yuman, Fox, Guinea, Dakota, Sudanese, Omaha, Nankanse, Iroquois and Crow, and six types of kinship terminology, i.e., Eskimo, Hawaiian, Iroquios, Sudanese, Omaha and Crow on the basis of cousin terminologies. Additional light of kinship has been thrown by Leach (1961), Goodenough (1970), Lounsbury (1964) and Wallace (1960). Kinship stands for the relationship by consanguinity as well as by affinity. Thus its bases are descent and marriage.

For Murdock "A kinship system ....is not a social group, nor does it ever correspond to an organized aggregation of individuals. It is merely, as the name implies, a structural system of relationships, in which individuals are bound one to another by complex interlocking and ramifying ties" (1949 : 91). Bohannan defines kinship as "a study of the cultural interpretations of social relationships, social categories, and social groups that are fomed among people who stand in biological or quasi-biological relationships or chains of relationships to one another" (1963 : 55). Kinship deals with allocation of rights and their transmission from one generation to the next.

Professor T. C. Das Memorial Lecture

These includes; (i) right of group membership, (ii)inheritance of property, (iii) succession to status positions, (iv) residence after marriage, (v) exercise of authority, (vi) selection of occupation and a great deal more.

Kinship studies are also valuable from the view point of functionalism. It not only demonstrates as to how parts are related to the whole, but also serves as a model or map of behaviour of the people.

While dealing with kinship relationship one comes across of two kinds of biological relationship-sexuality and descent, both direct and shared. But when one comes to consider the cultural image of these biological facts, he forthwith runs into the domain of kinship terminology. Kinship terms do not simply categorise biological kinsmen, they are veritable referents for specific types of social behaviour. "The system of kinship terms is, thus, a type of classification system for assigning people of given biological connections into social roles" (Bohannan, 1963 : 61). Kinship terms stand for the cultural perception of the roles which people are required to play in their kinship system.

A kinship system consists of three subsytems : the first is the subsystem of terminology, the second is the subsystem of ideal behavioural pattern associated with roles, and the third is the subsystem of social groups, which deals with eligibility for membership.

The Dongria Kondh sub-tribe though belongs to the Dravidian language family, its kinship system does not conform to Dravidian types. There is no cross-cousin marriage, either patri-lateral or matrilateral, among the Dongria. Their kinship terminological system does not conform to Murdock's Iroquois type, instead it conforms to the Hawaiian type.

STATUS AND AFFINITY

Dongria Kondh social organization is governed by the dual principle of prescriptive symmetric alliance and prescriptive symmetric alliance and prescriptive symmetric distance (between close consanguines). Dongrias strongly abhor sexual relation within the family save that obtains between husband and wife. Sexual prohibition with other family members is a cardinal principle of social organization. The Dongrias consider any breach of the norm of sexual prohibition within the family and the entire consanguineal group as bathos, atrocicus and inexcusably retributive.

Incest and exogamy are two different types of cultural norms. Forbidden sexual relations between a man and woman does not permit them to marry. Extension of exogamic restrictions outside the range of conjugal family is not the extension of incest taboo. These two often coincide, that is, those who are forbidden in marriage are forbidden as sexual partners also, because otherwise it would be socially disastrous. Dongrias explain that if a man gets a son by his own daughter, then the boy would be a brother to his own mother, which is unthinkable, confusing and socially disruptive.

Prohibitions on incest automatically produce exogamy - because of the association of sex and marriage - but the reverse is not necessarily true. Among the Dongrias the rule of exogamy applies to lineage, clan and fraternal clans. Women are exchanged in marriage with affinal descent groups in order to live at peace with each other. In spite of this practice, harmony between several descent groups is at stake. Among the Dongrias a girl can notionally be booked as a bride by a potential affine even immediately after her birth. But this is not automatic. The bride-taker will have to fulfil all the required paraphernalia together with the payment of customary bride-price when the girl in question comes of age. But there are several instances of such women having remained spinster even after they have crossed the marriagebale age. Some women have remained spinster life long. Such incidents lead to social disphoria, and ultimately to feuding between affinal descent groups or clans. Dongrias attribute two reasons for this sort of social pathology. The first one is that a girl blocked in such a manner by a man for his son remains unmarried if the latter selects another bride for him through dormitory life; and the second factor is that some prospective grooms are unable to pay the customary bride-price and host the associated feast. According to the norms of the Dongria society blocked girls cannot marry others. This impasse causes organizational and structural problems no doubt in the Dongria society. However, in view of the strong intra-clan solidarity and inter-clan structural opposition, the recalcitrant man enjoys social impunity. There is no mechanism either to compel or punish such a person, excepting the members of the aggrieved *Punja* (maximal lineage) and *Kuda* (clan) avenging their grievance through violent means. This leads to continued sporadic feuding activities of different kinds.

STRUCTURE OF DONGRIA SOCIETY

Levi-Strauss (1969) considers structures of societies either as 'elementary' or 'complex' considering the manner in which brides are acquired in marriage. He asserts that elementary structures rely on positive rules and complex structures rely on negative rules of marriage. He further asserts that the basic organization of society, both simple and complex centres in reciprocal alliances for exchange of women in 'marriage'. The bilateral, matrilateral and patrilateral types comprise the three elementary structures of exchange upon which simple societies have developed their distinctive forms. As constructs they have been "always present to the human mind, at least in an unconscious form" and it is not possible for the human mind to recall one without discriminating the others in opposition (Levi-Strauss, 1969).

The structure of Dongria society does not conform to the prescriptive designation of matri-lateral or patri-lateral or symmetric (bilateral) cross-cousin marriage system, and yet the society is well integrated through structural opposition and through cycles of exchange of women. Dongria social structure is regementary and simple. It is divided into a number of exogamous Kuda or clans which are not hierarchically graded. Apparently they are of the same status.

The Dongrias strictly practise *Kuda* or *clan* exogamy and this also subsumes village exogamy as the villages are of uni-clan composition. All the clans have their respective fraternal clans with which marriage is not permissible. Among the affinal clans one has several options, such as spatial, relational propinquity or longinquity. The most influential option is the status of the *Kuda* or *clan*. The options in affinal relationship are latent preferences. Although the Dongria informants vociferously claim that exchange of women in marriage amongst the affinal clans is symmetrical and there is no hierarchic gradation of clans, the factor of status does exist in Dongria society in an unapparent and disguised manner, which does not manifest in day to day interactions.

The Punja or maximal lineage of *Mondal*, *Jani*, *Bishmajhi*, *Pujari*, *Bada Raita* and *Raita* can exchange women in marriage with any one *Punja* of an affinal *Kuda*, but their preference is always for a Punja of equivalent or higher status. Here it need be mentioned that *Mondal, Jani, Bismajhi, Pujari* and *Bada Raita* are economically well off than *Raitas* or commoners. And in affinal relations the Dongrias try to maintain their status positions.

The following case study will illustrate the correlation between social status and affinity in Dongria society. The *Jani Punja*, in the study area, has affinal relations with other *Punja*, which provide an account of status preference. The lineagewise break-up is as follows :

The total number of marriage of Jani Punja in the study area : 22

with Jani Punja	—	7
with Mondal Punja	—	6
with Bismajhi Punja	—	3
with Pujari Punja	—	3
with Raita Punja	—	2
with Bada Raita Punja	—	1

Marriage, the socially needful and culturally inevitable institution, leads to group formation. Constitution of family rests on this universal institution, which among the Dongria is soleminized when young men are between 19 to 25 years of age, and girls are between 14 to 20 years of age. There may be exception in the age limit, which is followed by the Dongrias. Most of the Dongria marriages are arranged by the parents of the prospective groom. There are other modes of bride acquisition prevalent among the Dongrias, but their number is less. Flow of women in Dongria society, through marriage though apparently look symmetric, in fact they are not. The elementary opposition between functional superior and junior, propinquous and longinquous, cooperative affine and hostile affine etc. give rise to certain preferences amongst one's affinal *Kuda* or clan. 94 case studies from *wadeka Kuda* or clan of the study area present the following picture of actual marriage relationships. Out of 94 Wadeka marriage, the highest preference seems to be for *Jakesika*, followed by *Kadraka*, *Sikoka*, *Pusika*, *Niska*. The details are as follows :

Jakesika	—	27
Kadraka	—	21
Sikoka	—	17
Pusika	—	15
Niska	—	14
Total	—	94 of *Wadeka Kuda*

Members of these clans have their clan territories in the proximity of each other. Though there is minor territorial dispute between the Wadeka and Jakesika clans, the relationship is not bitter enough to preclude establishment of fresh affinal ties between them.

DONGRIA KINSHIP TERMS

The terminological aspect of any kinship system is as important as the behavioural and organizational aspects. Kinship terms are the positive indicators, if not the determinants, of important social factors, and thus are crucial for the study of a society. Kinship terms are like 'sign pots' to interpersonal conduct or etiquette, with implications of appropriate reciprocal rights, duties, privileges and obligations (Radcliffe-Brown, 1952 : 62). Radcliffe-Brown asserts that : "In the actual study of kinship system the nomenclature is of utmost importance. It affords the best possible approach to the investigation and analysis of the kinship system as a whole" (1952 : 62).

Kinship terms used in address and reference as denotative of social positions, relevant to interpersonal conduct; are forms of status terminologies. The status term is : "A word designating a class of individuals occupying simultaneously or serially a single position in the social system with specific defining patterns of rights and duties, the fulfillment of which is legitimatized and guaranteed by sanctions" (Edmonson, 1971).

The Dongrias speak Kuvi, an oral language of the Dravidian Language family. Dongria kinship terms are in conformity with the morphology of Dongria language. The study of kinship terms helps one to get the idea that underlies the Dongria Kondh's way of recognizing and categorizing the kins. And further, it also helps to know and grasp the nature of rights, duties, privileges and obligations in respect of the various statuses in the kinship system.

There are several groups of kinsmen who are related to the Ego through other members of the family; and when, kinship terms are enumerated in this manner, they stretch out from family circle or *Panduri Pandra*, or Icha Kutumba and Kaja Kutumba to wider kin groups, such as, *Ra-eja* (minimal lineage), *Punja* (maximal lineage), and *Kuda* (clan). Dongrias classify their clans into two categories, such as, *Tadabudda* (consanguines) and *Samdinga* (affines).

The Dongria kinship terminological structure conforms to Murdock's Iroquois type on the basis of cousin terms (1949 : 223), though they do not practise cross-cousin marriage.

In order to understand various types of application and function of kinship term it is necessary to analyse them as per Murdock's threefold technical classification, namely, (i) mode of use, (ii)linguistic structure, and (iii) range of application.

MODE OF USE

Part of the reciprocal behaviour characterising every relationship between Dongria kinsmen consists of a verbal element, the terms by which each addresses the other. Although personal names are usually employed by the Ego to address the younger relatives, kinship terms are frequently employed as terms of reference while speaking about him/her. In the kinship terminological structure of the Dongria, in most cases, the terms of address and terms of reference coincide except in the case of husband, wife, brother (elder and younger) and sister (elder and younger). The younger brother and sister are addressed by name. Likewise in the term of reference, son and daughter are differentiated from each other by a prefix which signifies the sex, such as *Kuan* (male) and *Ichan* (female) to the term Milla, meaning child.

In Dongria kinship terminological system FaFa, FaFa Fa, Mo Fa, Mo Fa Fa are terminologically merged and are addressed as *Eh Tadi* and referred to as Tadi. Similarly FaMo, FaFaMo, MoMo, MoFaFa are terminologically grouped and addressed as well as referred to as Aaji. From this it is evident that in this case the criterion of generation is ignored. And further, in the second and third ascending generations all male kins are terminologically merged as the female kins. In the first ascending generation the term of reference for Fa el Br is *Abba* with the prefix *Kaja* or elder for Fa el Br Wi and *Milo* or younger for Fa Yo Br Wi. The term of address for HuFa and WiFa is *Abba* but the term of reference is *Potleya*. Similarly the term of address for Hu Mo and Wi Mo is *Aya* and the term of reference is *Para*. Thus the terms of reference are more lucid and unambiguous than the terms of address.

LINGUISTIC STRUCTURE

Kinship terms, when classified according to linguistic structure, are distinguished as elementary. derivative and descriptive.

An elementary term is an irreducible linguistic morph which cannot be analyzed into lexical elements with kinship meaning. In Dongria kinship terminological system terms like *Abba* (Fa), *Aya* (Mo), *Tadi* (FaFa), *Aaji* (FaMo), *Tada* (elBr), *Nana* (el Si), *Dokra* (Hu), *Dokri* etc. are some of the elementary ones.

A derivative term is one which is compounded from an elementary term, and from some other lexical element which primarily does not have a kinship meaning. Some examples of such terms among the Dongria Kondhs are *Kaja Abba* (Fa el Br), *Kaja Aya* (Fa el Br Wi) *Milo Aya* (Fa Yo Br Wi), *Nati Mila* (SoSo, DaSo), *Puti Mila* (SoSoSo, DaSoSo), *Nali Mila* (SoSoSoSo, DaSoSoSo), *Sunqa Mila* (SoSoSoSoSo, DaSoSoSoSo) etc.

A descriptive term is one which combines two or more elementary terms to denote a specific relative. In the Dongria terminological system there is no descriptive term.

RANGE OF APPLICATION

This is undoubtedly the most interesting part of kinship terminology. As regards the application, kinship terms are differentiated as denotative and classificatory.

A DENOTATIVE term is one which applies only to relatives in a single kinship category as defined by generation, sex and genealogical connection. Sometimes a denotative term is applied by a speaker to denote a single kin. However, the denotative term is applied to several persons of identical kinship connection.

Denotative term applied by a speaker to denote a single kin :

Abba (Fa), *Aya* (Mo), *Koki* (Moyosi), *Kaka* (Moyosi Hu), *Awa* (el Biwi), *Mechew* (el Si Hu), *Sadhu* (WiSi Hu), *Pabu* (Fayo Br), *Dokra* (Hu), *Dokri* (Wi), *Kuan Milla* (So), *Ichan Milla* (Da), *Banja* (SiSo), and *Banji* (SiDa).

CLASSIFICATORY kinship terms constitute the crucial part of the terminological structure. A classificatory term is one that applies to persons of more than one kinship category as defined by generation, sex and genealogical connection.

Kroeber (1909) and Lowie (1929) maintain that classificatory terms would result if one of the following criteria, namely, generation, sex, affinity, collaterality, bifurcation and polarity, is ignored. Compared to genealogical connection the criteria of generation and sex are more prominent with regard to classificatory terms in Dongria Kondh society. In the Dongria kinship terminological system denotative terms are non-existent in the second, third and higher ascending generations, as well as in the second and lower descending generations.

A classificatory term arises only when one or more fundamental distinctions are ignored and relatives are terminologically clubbed. The following are the classificatory terms in the Dongria Kondh kinship terminological system.

1.	Tadi :	Fa Fa Fa Fa Fa Fa Fa Br Fa Fa Si Hu	Mo Fa, Mo Mo Br Mo Mo Si Hu Fa Mo Br
2.	Aaji	Fa Mo Fa Fa Mo Fa Fa Bi Wi Fa Mo Si	Mo Mo Mo Mo Mo Mo Mo Si Fa Fa Si
3.	Tada	El Br Fa Br So (el) Mo Si So (el)	
4.	Nana	El Si Fa Br Da (el) Mo Si Da (el)	
5.	Kaja Aya :	Fa el Br Wi Mo el Si	
6.	Kaja Abba :	Fa el Br Mo el Sittu	
7	Mama	Mo Br Fa Sittu	
8.	Amma	Mo Br Wi Fa Si	
9.	Potleyu	Hu Fa Wi Fa	
10.	Para	Wi Mo Hu Mo	
11.	Budda	Yo Br Fa Br So (Yo) Mo Si So (Yo)	

12.	Boi	YoSi Fa Br Da (Yo) Mo Si Da (Yo)
13.	Hsreyu	Wi el Br Hu el Br Hu el Sittu
14.	Hasu	Hu el Si Wi el Si
15.	Marandeyu	Wi Yo Br Hu Yo Br
16.	Nanja	Hu Yo Si Wi Yo Si
17.	Kudwa	Yo Br Wi So Wi Wi Yo Br Wi
18.	Jawedi	Hu el Br Wi Wi el Br Wi
19.	Mehnatanyi	Fa Si So Mo Br So
20.	Mehnatanyi	Fa Si So Mo Br So
21.	Janwe	Da Hu Yo Si Hu Hu Yo Si Hu
22.	Samandi	So Wi Fa Da Hu Fa
23.	Samandini	So Wi Mo Da Hu Mo
24.	Nati	So So Da So
25.	Nateni	So Da Da Da
26.	Mirew	el Br So Hu el Br So Hu Yo Br So Wi Yo Br So Wi Si So

27.	Maga	el Br Da
		Hu el Br Da
		Hu yo Br Da
		Wi el Br Da
		Wi yo Br Da
		Wi Si Da

KIN CATEGORIES

A 'category of persons' can be defined by selecting one or more criteria shared by all members of that category. Any category can function to disperse its members to group formation, even though its total membership does not thereby constitute a group. Members of a particular category are organised to discharge their assigned functions, which ultimately results in the smooth functioning of the concerned society. Kinsmen in all societies are categorized under certain criteria, which are manifest in their socio-cultural behaviour. In traditional societies kinsmen are categorized on the basis of consanguinity, affinity and residence pattern. Categorization contributes to the ordering as well as smooth functioning of the society, members of a category cooperate with each other as per the defined social norms so as to fulfill the functions necessary for the maintenance of the society.

Dongria Kondhs categorize their kins on the basis of consanguinity, affinity and residence pattern.

CONSANGUINEAL KIN GROUP

A consanguineal kin group usually consists of members who are related to one another by blood. It is not confined to or limited within the residential group. In this group one feels socially and emotionally closer to other members because of the tie of blood. Husband and wife belong to different consanguineal groups, whereas siblings, parents and children are always consanguiness to each other.

In Dongria society the members of a consanguineal kin group are known as *Tadabudda* group, which is patrilineal and patrilocal (Patridomestic and patrivicinal). It is a fraternal group where one addresses and refers to an elder member of his generation as *Tada* (elder brother) and to a Younger member of his generation as *Budda*. Irrespective of age one refers to other as *Tadabudda* or brothers, meaning consanguines. This group includes all the adult male descendants of a known ancestor, wives of male kins of ascending generations and their children, excluding married sisters and daughters. Wife is an affine, and therefore is not a member of one's *Tadabudda* group.

Tadabudda unit is exogamous and incest prohibition is strictly followed. The *Tadabudda* unit embraces all consanguines, real or putative. In case of putative consanguines the ancestor is unknown, and in respect of real ones it is known. The putative consanguineal group is the largest, called Kuda or clan, which includes maximal lineages or *Punja* and each of them is divided into two, senior and junior. Every Punja has a known ancestor and thus all members within it are supposed to be genealogically related. Every *Punja* in turn includes a number of *Ra-eja* or minimal lineages.

By birth everybody is a member of his/her father's *Ra-eja*, *Punja* and *Kuda*. After marriage a girl or woman ceases to be an effective member of her father's or natal *Kuda*. The spouses of the male members of a *Kuda* become consanguines for their offsprings and for members of all the descending generations.

Every *Kuda* includes six *Punja* or maximal lineages, such as, *Mondlenga* (senior secular), *Janinga* (senior sacerdotal), *Bismajhinga* (junior secular), *Pujari* (junior sacredotal), *Bade Raita* (elder commoner) and *Raita* (commoner). Each Punja is subdivided into two, such as, *Kaja* (senior) and *Icha* (junior). Thus there are twelve segments within a *Kuda* or clan. Every Dongria village (Nayu) contains members of all the six *Punjas* or maximal lineages, because every Punja has a specific function to perform, namely, *Bismajhi* has to bring rice from home for village ritual, *Jani* has to invoke the deities, *Pujari* has to cook the rice, *Mondal* has to supervise and coordinate the proceedings, and *Raitas* are to contribute materials, render manual service and participate in the ritual as per custom.

Kuda regulates marriage, but it is not a close interactional group. It is the larger socio-political unit. In a *Kuda*, members of Mondal, *Bismajhi* and *Pujari Punjas* have symbolic higher status over the *Raita* or commoners. And among the *Mondal*, *Jani*, *Bismajhi* and *Pujari Punja* there is status difference, that is Mondal at the top followed by *Jani*, *Bishmajhi*, *Pujari*, *Bada Raita* and *Raita*.

A *Punja* is corporate group with greater socio-cultural significance. Members of a *Punja* get together during marriage ceremonies, death rituals and Meriah festivals. *Punja* members contribute to and participate in marriage and death feasts. If a person is poor and unable to pay *Malajhula* or bride price, then his *Punja* members come to his rescue. Similarly if the *Panduri Pandara* or family of the deceased is resourceless, then the Punja members too contribute both in cash and kind for the death ritual. However, all members of a *Punja* never observe the purity and population rites on occasions of birth and death. Only the members of a *Ra-eja* or minimal lineage observe birth and death pollution for three days and thereafter they undergo the purificatory rite.

Dongria Kondh villages are uniclan ones. Hence land, forest, water and other natural resources are collectively owned by members of the Kuda or clan. Clan solidarity and cooperation intensifies in the event of inter clan conflicts and feuds. *Kuda* and *Punja* are both continuing property holding corporate groups.

RESIDENTIAL KINS

Marriage in combination with the rules of descent and residence determine the nature and characteristics of a social group. Spatial referent of residence, such as, household, territorial division of households and distance of spatial relationships to households contribute to the understanding of the structure and function of residential kin groups, namely, whether it is patridomestic, patrivicinal, patripropinquous or patrilonginquous (Carrasco, 1963). Among the Dongria Kondh the form of residence is patridomestic and patrivicinal. And *Neyu* or household, *Ra-eja* or minimal lineage and those members of the *Punja* or maximal lineage who reside in the same village constitute the residential kin groups or local kin groups.

According to the Dongrias *Ra-eja* and *Panduri-Pandra* are notable kin groups which include all forms of family. The institution of marriage unites a man and a woman as husband and wife to form a family. This residential group leads the social process to continue through procreation and enculturation.

Among the Dongria Kondh the nuclear or *Panduri Pandra* family type is predominant, followed by *Bijamanapu* or extended family. There are few *Manda* or polygynous families. The co-wives live under one roof and refer to each other as *Tadarinda* and address each other as *Ali* or friend.

Family fulfils all the necessary functions for a person among the Dongrias.

AFFINAL KIN GROUPS

Prevalence of incest taboo and rules of exogamy require a person to establish affinal relationship outside his own consanguineal kin group. The Dongria Kondh use the term '*Hamdinga*' or '*Samdinga*' for the affines, real or potential. Real affines are those who are related to the Ego through marriage alliance. One may belong to Ego's affinal group, but does not constitute his/her possible spouses. In Dongria society marriage alliance is not settled with mother's patrilineage or *Punja* upto the sixth generation lineally and upto fifth degree laterally. In general they prefer establishing marriage alliance with other lineages with a view to widening their social network and thereby consolidate peace and order.

Every Dongria Kondh leans heavily on his affines or *Hamdinga* group for various purposes. Close relationship with the affines is maintained through mutual visits and presentations. Affines participate in all life-cycle rituals. When a child is born its uterine kins are not notified formally by its parents or *Panduri Pandra*. The uterine kins on their own collect the information come to see the newly born child with gifts. On the twenty-eighth day, the *Mama* or (Mo Br) of the baby takes the child and its mother to his home for the celebration of the name giving ceremony or *Mila-Daru*. The Mo Br selects a name for his SiSo, and after the name-giving *ceremony* is over he takes the child to every family of his village in order to introduce to them.

On the occasion of the marriage of a person Mo Br plays an important role, particularly in respect of a girl. Before marriage MoBr takes his SiDa to his home for a farewell meal. He too also presents gifts to his SiDa which consist of utensils, clothes, ornaments, livestock and foodgrains. In return he receives part of the bride-price or *Malajhula* from his SiHu in respect of his SiDa.

On the death of a person and in the celebration of mortuary rites members of *Samdinga* group of affines play an important role. The Dongrias assert that these are the crisis situations when one needs the active support of one's consanguines and affines.

KUDA OR CLAN

It is the most widespread, but loose unilineal social group. It consists of both real and putative consanguines. In Dongria Kondh society Kuda or clan organization is a key factor. Members of a *Kuda* are dispersed but confined to three to seven adjoining villiages on the Niyamgiri hill track. Among the Dongrias there are as many as forty eight *Kuda* or clans, such as:

1. Jakesika 2. Wadeka 3. Pusika 4. Kadraka 5. Sikoka 6. Niska 7. Kundika 8. Wengesika 9. Mandika 10. Kumbarika 11. Wanjelika 12. Kalaka 13. Palaka 14. Pidkaka 15. Melaka 16. Nidraka 17. Hikoka 18. Srambaka 19. Saraka 20. Kudruka 21. Praska 22. Kulsika 23. Urlaka 24. Mutka 25. Huika 26. Tuika 27. Miniaka 28. Kunaka 29. Palaka 30. Nundruka 31. Himilaka 32. Kanjaka 33. Birchika 34. Angaka 35. Nonoka 36. Duika 37. Werelika 38. Minska 39. Jambalika 40. Karchika 41. Tadika 42. Bariaka 43. Bidika 44. Urleka 45. Pidikaka 46. Xandamaka 47. Gumadangka 48. Kandamaka.

Clan exogamy is very stnctly followed. Some Dongria clans have fratemal clans too. A clan together with its fraternal clans constitutes the exogamous unit. Every body uses the clan appellation as his/her social identity. In case of adoption one uses the clan name of the person who had adopted him, but he can not marry in his natal clan. Adoption of a child can be from any fraternal clan and not from the affinal ones. There are long standing feuds between sveral clans, and fresh affinal relationship between them is avoided.

With the growth of population, migration has became inevitable because of scarcity of land for the practice of shifting cultivation and horticulture. Emigration has resulted in the split of the original *Kuda* or clan. Although people have adopted new sub-clan names, they invariably use original *Kuda* identiry in their social interactions. Over the years eleven clans have split up and the list is as follows :

Original clan (*Kuda*)		**Fratemal Clans (*Taikuda*)**
1. Jakesika	—	Wangesika, Kulesika, Monusika
2. Wadeka	—	Watuka, Nadaka, Nanika
3. Kadraka	—	Kodruka, Kutruka
4. Pusika	—	Huika, Tuika, Duika
5. Sikoka	—	Hikoka, Hemesika
6. Kundika	—	Mandika
7. Niska	—	Praska, Pidkaka, Jambaka
8. Kalaka	—	Sarka, Karka
9. Malaka	—	Palaka, Kalaka
10. Srambhaka	—	Urlaka, Sarka
11. Nundruka	—	Kunaka, Tadika, Wengesika, Wandelika

Members of fratemal clans always coorperate with one another as they are the members of an original clan. They function more or less as a cohesive socio-economic unit and thus are emotionally bound up. Original clans have their respective tutelary deities, who are also propitiated by members of all the fratemal clans that from a larger unit. Tutelary deities help in maintaining clan solidarity and cohesiveness. Clan solidarity enhances survival value among the Dongrias as they are feudprone. The reasons of clan feud are the following :

1 Theft or unauthorized collection of palm juice from another person's.

2. Murder of clan member during Meriah or fertility festival.

3. Dispûte over control of clan territory and natural resources.
4. Non-payment of bride-price and blocking of marriage.
5. Abduction of young girls against willingness for marriage.
6. Capture of the *Meriah* buffalo (votive buffalo) during a Meriah festival.

Inter-clan feuds sometimes lead to murder. Such feuds promote intra-clan solidarity. Clan prestige is always considered higher to an individual's self-prestige and interest.

INHERITANCE OF PROPERTY

Property is an institution by itself, it not only includes wealth or material possession but also the right to control it. Inheritance means a transference of status, based upon a preexisting relationship between the predecessor and the successor. Among the Dongria Kondh the rule of primogeniture is in operation, because both the social rank and the house are inherited by the eldest son. Other assets are equally divided among all sons. The house is given to the eldest son because he has to regularly propitiate the manes or *Ilu Arpa*.

RULES OF RESIDENCE

Dongria society is patrilineal and the form of residence is patriolocal. After marriage the bride moves into the paternal house of her groom. Initially the couple is accommodated in the house of her groom. Initially the couple is accommodated in the house of the groom's father, and later on he builds a house for himslef near his ancestral house. Therefore, the form of residence initially is patridomestic and later on it, becomes patrivicinal. These rules of residence reflect the economic, social-structural and ideological life of the Dongria Kondh.

RULES OF ADOPTON

Adoption is an institutionalised practice which makes a person a member of two kinship groups : in one he is a member by birth and in another through adoption. A Dongria Kondh adopts a male child if he has no son for economic reasons. The adopted son has to discharge the duties of a son, which range from agricultural activities to offering of oblations to the manes. An adopted boy is known as *Pusikiti Mila* in Dongria society. A child who belongs to one's own clan is preferred for adoption. But often a child from a fraternal clan is also selected for adoption. And when a child is chosen from another clan a ritual called *Jaatiatpoli* is performed in order to merge it in the adoptor's clan. Thereafter, the adopted child is entilted to all the rights and duties of a son. These days they prefer DaSo for adoption, if one has no son. This means that land and other immovable property can be passed onto members of affinal class. Formerly clan property always remained with the members of the original clan.

KINSHIP RIGHTS AND OBLIGATIONS

The inherent patterned rights and obligations is an impenetrable factor of the kinship structure of a society, which indicates the nature of the structure and function of that sociaty. In kin based society like that of the Dongrias every person has a bundle of rights and obligations as per social norms and customs.

Among the Dongrias kinship rights and obligations are regulated by the proximity and depth of kinship relationship. Kinship rights and obligations cover the entire life-cycle gamut, i.e.; from birth to death. On these crises situations kinsmen extend cooperation and service to each other and exchange gifts and countergifts. The hallmark of the kinship system in such simple societies is the mutual physical and material interdependence.

Kinship system of the Dongria Kondh has not yet fully yielded to any significant change. Nevertheless, changes have started taking place.

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Toto is not a Vanishing Tribe but at the Cross Roads

MANIBRATA BHATTACHARYA

Abstract : It is an undeniable fact that some so called primitive tribal communities have been facing extinction But the Toto is exception. In fact, the Toto are the growing population. There are reasons to believe that class formation has been accentuated among the Toto due to introduction of new land tenure system At present, the Toto could not maintain isolation and have been suffering from change in the social structure. The Toto Kalyan Samity, a recently established welfare society of the Toto is demanding the privilege of Primitive Tribal Group.

In a discourse on *future of anthropology*, Lévi-Strauss (1959 : 60) has pointed out that one of the fundamental problems facing contemporary anthropology is disappearing the peoples of so-called 'primitive tribes'. It is a fact that some of the societies known to enthnography have disappeared because of depopulation produced by the introduction of extragenouse factors, largely foreign infectious diseases. Nevertheless, Howells (1977) has noted the horryfying stories of the complete annihilation of the aboriginal population of Tasmania by land-hungry European settlers in the nineteenth century. It is a tragedy that between 1900 and 1950 nearly ninety tribal groups have disappeared in Brazil and, where there were formerly hundred, barely thirty now remain in relative isolation. Fifteen languages have been lost in less than fifty years. The advance of epidemic disease and malnutrition is reported in numerous cases, symptoms of terrifying extinction of whole populations with irreversible modifications of demographic structure is inevitable sociological and psychological consequences. Similar reports are beginning to emerge from New Guinea.

TRIBAL SITUATION IN INDIA

In case of India, it is an undeniable fact that some so-called 'primitive' tribal communities have been facing threat of extinction so far their demographic structure is concerned. The Onge and Great Andamanese of the bay Islands, the Kodaku and Pando of Madhya Pradesh and Cholanaikan of Kerala are some examples of the tribal populations those are facing depopulation. The Todas and Kotas are static or dwindling populations. In this context, it deserves to mention that they have got a population strength below 500 individuals. Raza and Ahmad (1990 : 7) have reported that 169 tribal communities have population below 500 individuals (1990). But their estimation was based on 1961 census year.

THE TOTO POPULATION OF NORTH BENGAL

However, the case of the Toto of Totopara, a village at the border of W. Bengal and Bhutan, is quite different. In fact, the Totos are growing population who have increased 23 per cent during 1951-61 and 48 per cent during 1961-71, 21.7 per cent during 1971-81 and 23.31 per cent during 1981-91. During 1991-95 the average annual growth rate of of the Totos is 2.4 per cent which indicates quite higher growth rate. Therefore, it is quite imaginary notion that the Toto is a vansihing tribe. Such erroneous idea has emerged due to imperfect knowledge coupled with exagerated report coming out through popular news media.

TOTOS AT THE CROSS ROADS

The Toto society is not just an egalitarian but a rank society having a tradition of hereditory headman locally called Mondal. During 1889-94 the whole area of the Totopara mouza (revenue village) was recorded in the name of the Modal on behalf of the whole community (Roy Burman 1964 : 16). Incipient form of class formation has emerged among the Totos since they started orange cultivation as cash crop. Though orange cultivation had not been practised since more than half a century, still the orange trade has played an important role and a section of the Toto, who are, comparatively, economically well off, purchase small quantity of orange from Bhutan and sell these to the local markets. Other section of the Totos has been working as porter for carrying oranges from Bhutan to Totopara during the middle of October to middle of November since last few decades. The class formation has further accentuted with the introduction of new land tenure system which had introduced in 1969. From 1889 to 1968 land was owned communally and, therefore, there was no perceptible inequality in land distribution among the Totos. There is no doubt about the fact that fertile land was grabbed by the non-Totos even in the recent past.

Such displacement of economic arrangement from *jhum* cultivation to mixed farming of *jhum* and orange cultivation and subsequent abandonment of orange cultivation but adoption of related activities in orange trade, is not sufficient enough to explain the recent trend of change in Toto societies.

However, from a different perspective land alienation has been the main issue of understanding the abysmal situation and the changing life style of the Totos. As a matter of fact, the Totos are compelled to take up different occupation to maintain their livelihood.

During last few decades, the Totos have been increasingly participating in different economic activities. This is largely due to shift of their traditional subsistence activities and adoption of different non-traditional occupations like agricultural labourer, working as daily labourer in road construction, employed as unskilled labourer in mining and quarrying on daily wage basis, engaged as helpers in local entrepreneurs on contract basis. Besides, some of the school educated Totos are engaged in service, earning monthly salaries from government and non-government organizations. In fact, their participation in organized and unorganized sectors generated uneven economic development among the families of the Toto society. As a result, they are to participate in wider market oriented and introduced commercial network of this locality which is mainly based on agricultural economy. The result of such economic involvement of the Totos has altered their structural equilibrium which eventually resulted in transformation of internal segmentary organization of Toto social system into less segmentary and more organic one.

As a matter of fact, the Totos could not maintain their relative isolation and eventually their social system has been undergone a drastic change. They have been incorporated into the regional social system of other endogamous and hierarchically arranged communities. The neat result is transformation of rank society towards a peasant-like community with some sorts of class differentiation. With the implementation of land reforms and family-wise distribution of lands among the Totos resulted in the replacement of traditional community rights, usufructory rights of tribal land ownership. As a result, traditional occupancy of cultivable lands is circumcised to the extent that communal rights have disintegrated into private ownership (family/person). Such economic and social changes have seriously affected the tribal social equilibrium. A class differentiation, if not so marked in the milieu of traditional social system, is emerging based on the exclusion of some Totos from access to ownership of arable land. Such deprivation of cultivable lands to some people coupled with adoption of differential occupations practically change the tribal ethos.

As a result, the class formation has been started. An incipient class formation of the Totos can be traced in the year of 1960. However, historical documents reveal that with the imposition of land tax in 1889, the Totos were subjected to British ruler. Even then land was owned communally and there was no apparent inequality in land distribution from 1869 to 1959. But land alienation process internally and silently was started as early as 1952 with the settlement of the non-Toto outsiders. They grabbed the fertile land of Totopara without the notice of the Totos. In 1960 the government was on the alert and eventually has adopted a measure against land grabbing motives of the non-Totos. Hence, alert government has tried to prevent the land encroachment by the non-Totos and has adopted measures of alloting and recording the land on individual Toto names. But such measures with good intention do not yield the desired result. As a matter of fact, some of the Totos were landless as noted even by Das (1969 : 64). He has recorded that 11.36 per cent of Toto families possess land below 1 acre, 48.87 per cent 1-2 acres, 12.50 per cent 2-3 acres, 15.91 per cent 3 acres and the rest 11.36 per cent are landless.

The class formation has also been started with the spread of education and opening up of employment facilities in government, semi-government, non-government voluntary organizations and such other places. Monthly salary and weekly earnings make some families well-to-do, as such, inequality is becoming prominent. The incipient class difference can be readily ascertained from dress, house type etc. But the rank and class difference have always been controlled by tribal ethos and the Totos do not affect much in their day to day life in spite of emergence of incipient class hierarchy. Like many other tirbal concentrated areas, the economic systems of the Totos are changing. The traditional rights of access to natural resources has been denied which has adverse effect on the Totos. In fact, usufruct relation with forest was changed. The land is no more communal property. Once horticulturist Totos are now agriculturist and have adopted plough cultivation. In *jhum* cultivation mode of possession of land was largely communal and family was a untit of production and consumption. Technological facilities, tools and equipments associated with the *jhum* were simple; the Toto had the bill-hook to make hole and to put some seeds. Now they are accustomed to use plough though not efficiently. The organization of labour is simple mainly based on family and near relatives. The relationship ties are important basis for work organization. *Jhum* or swidden cultivation of the Totos were very much related to their social structure and cultural pattern. The jungle clearing and firing *cung-ca pu-na* was done during February-March by the adult male, female and grown-up children of the clan members. All the able bodied clan members took the decision at the time jungle clearing and burning i.e., *cung-ca pu-na*. The office of the Mondal and panchayat were meaningful in this context of pan tribal organization during subsistence strategy. The activities necessary for the maintenance of the cultivated plots and to prevent the wild animals organized efforts of the clan and lineage members were essential. The clanwise distribution of land and institution of farm house, *nion-kosha*, were functionally related with such *jhum* cultivation as practised by the Totos. At the time of sowing participation of the lineage and family members were essential. This participation used to reinforce the social ties between the families and the lineage members. The male members were usually engaged in making seed holes and the women and children followed them dropping seeds in the holes. On this occassion they traditionally observed the great ceremonial offerings to the deities which has significant socio-religious function as all the

Toto people have to participate during worshiping of *Ishpa*. Even nowadays *Ishpa* worship is the dominant ceremony. However, they have a special festival in connection with *kauni* (*Sotaria italica*) cultivation when they ritually appease the spirits. This ritual connected with *kauni* cultivation which is known as *achu* or *kauni puja*. The farm house in cultivable plot, *nion-kosha* and living in the *nion-kosha* at the time of ripening of the crops was closely associated with the traditional subsistence strategy, *jhum* cultivation.

In fact, *jhum* cultivation was restricted since the early twenties with the improvement of communication networks by the colonial administration for controlling the people, collecting land revenue, other taxes and promoting tea plantation and associated industries and commerce, namely supplying of various kinds of timbers from Duars. This improved communication network has direct impact upon the subsistence strategy of the Totos. They had adopted orange cultivation which is essentially a cash crop. The influence of cash crop has begun to appear within a short time which has changed the Toto society in various ways. Differential land alignment pattern and soil compositions at different elevations have resulted in differential growth and production of oranges. As a matter of fact, a number of tribal families could not eke out with the new cash crop based on mixed economic system. Meanwhile, with the cash crop economic strategy money based exchange or limited and regulated economic system has made its appearance to be felt. The concepts of wage labour, labourer - *habush*, tenant - *dinga* or *poing-debna* - rich, cash sale - *pucha* and credit sale - *udai* (corrupt form of Nepali language), profit-*mung-chena* and *lossnok-shan*, promissory note - *tongka* (corrupt form of Nepali language) - *ko-lo* etc. incorporated in the dialect of the Totos.

The change of the traditional subsistence activities has also reflected in dress and personal adornment of the Totos as well as household goods and utensils which they use in daily life. Most of the people using modern dress like the neighbours living in the plain. Inequility of non-traditional form has begun to appear which, however, controlled and regulated by the ethos.

The orange cultivation started in the thirties and the production ceased in the forties. Though they did continue *jhum* cultivation to some extent with orange cultivation, with the ruining of the mainstay of their economy, social equilibrium has further affected. In reality the deteriorating traditional social condition of the Totos can be noted at different facets of their social life. Land were passed to the non-Totos, the girls were allured by the alien neighbours. Traditional panchayat system has no more resolved disputes and conflicts in Totopara. All these emerging social problems manifest the laxity in tribal norm or conflict between the societal individuals and point out the changing situation of the tribal ethos.

The Nepali and Toto communities have come into conflicting and co-operating relations. They learned the practical utility and benefits of plough cultivation and gradually they have adopted plough cultivation. They begin to grow maize, millet (Nepali marua) and paddy using plough and manure. Roy Burman has rightly mentioned "apparently the Totos have been immensely benefitted by learning the technique of settled agriculture from the Nepalis, but they have been greatly loosers too. All the best lands have been taken over by the Nepali settlers during less than two decades....." Due to such transfer of lands and failure of cash crop (orange cultivation) economy the most of the Totos are now a days working as daily labourer and a few become even beggars which shows the changing situation of tribal life especially the Totos. In fact, it was custom of the Totos to share the land among themselves so that each family could earn its livelihood. Sanyal (1955) has noted "if any poor or distressed person of the community asks for help .. the person refusing help commits a crime. The village elders explain the matter and the offender is let off with a severe warning and one *handi* of liquor to the community as punishment." Such tribal custom is no more in vogue. The Toto Kalyan Samity - a recently established welfare association of the Totos, whose members are fighting for the rights of the Totos and are very much concerned with the development of the Totos. The Association is now ascertaining for the declared privileges for the Totos as a community belonging to the "Primitive Tribal Groups". They are also insisting on their rights to live along with their ethnic identity and to get modern health facilities, education, and other essential assistance for maintaining desired minimum standard of living as other people are enjoying. In fact, this welfare association of the Totos has taken up largely the old and traditional role of the panchayat. Such a trend of social change among the Totos is not a sudden event without any historical reasons. The truth lies to the fact that since 1931 demographic pattern of the Toto village has been rapidly altering. In reality accelaration of demographic changes has been perceptible since the fifties.

Table-1 Population of Totopara (1931-96)

Year	Total population	Toto		Non-Toto		Population density	
		population	percent	population	percent	density	difference
1931	334	328	98.2%	6	1.8%	5.97	
1952	574	383	66.7%	191	33.3%	3.48	2.49
1953	550	322	58.6%	228	41.4%	3.63	0.15
1969	1156	482	41.7%	674	58.3%	1.72	1.81
1981	1497	709	47.1%	788	52.9%	1.37	0.35
1991	1802	904	45.1%	898	54.9%	0.99	0.36
1993	2152	962	44.7%	1190	55.3%	0.97	0.02
1996	2449	1039	42.4%	1419	56.6%	0.83	0.04

It is evident that in 1931 only six male constituting 1.8 per cent of the total population without any permanent houses became 33.3 per cent of the total population living in 30 permanent houses out of 90 houses of the village in 1952. Such phenomenal growth of the non-Toto population must have a bearing on the socio-political life of the Totos. In 1996 the Toto population had reduced to 42.4 per cent of the total population of the village. In fact, there has also been drastic change in the land holding pattern of family structure. It is quite evident from the above table (Table-1) that they become the minorities in their own village. The change of demographic structure have brought considerable change of both ideology and mundane life of the Totos. With the intrusion of the new ethnic groups the tranquility of their secluded society has been disrupted. New subsistence strategy adopted economic transaction changed and reciprocity is not only the exchange system rather redistribution and market change have become the dominant distribution system. Even the village area is functionally differentiated into mainly two sectors: market-cum-residential area and residential area. In fact, self-sufficiency of the Totos is lost. The change in demographic structure and economic transaction alter the life style of the Totos but organisations have severely shaken the collective soul of the Totos. Their ethos are in conflicting situation. Rapid interaction with the non-Totos either advance tribes as they called or the Nepali or other local people from the plain has made them suffering from inferiority complex which is the main evil force must be encountered by any means. Before intrution of the non-Totos adequate food-supplies, freedom of indebtness, non-exploitative social structure, equality of the sexes, a remarkable tolerance in all interpersonal relations, less dependence on the non-Totos and ecologically well balanced social life were the outstanding characteristics of the Totos.

It seems not far from the reality that the traditional Toto tribal social system is about to be crumbled down. Tribal collectivity has been transforming to peasant like factional multi-ethnic village community. Structural change is emerging which is gradually replacing traditional rank tribal society into internal class differentiated social groups with differential distribution of assets and status (educated). The well off sections do not always cycle their surplus to the lower levels of the economic ladders. There is considerable economic inequalities between families. In fact, present mode of production based on production, consumption and economic decision making within family is emerging in the Toto society. This sort of socio-economic transition gives rise a new social order. At the same time the Totos could not shake off age-old values of tribal society. Therefore, there is a synthesis of old and new social orders which resulted in the emergence of Toto Kalyan Samity, welfare association of the Totos (where educated and few old tribal leaders are participating to fight against the odds and for the safeguard of the Totos rights on land and for getting welfare facilities granted by the government)..

The present Toto community characteristically differs from its traditional way of living to the quasi-independence of household groups. It is true that the Totos are not even now competitors for scarce resources and income due to retaining lag of tradition as well as economic strategy of shifting cultivation of the recent past. The emergence of dyadic relations of typical peasant life in terms of contract bound relationships in many different shperes of life enforced by tradition and convention is gradually appearing in the multiethnic village as well as micro-regional system. The contractors, employers in petty trade and other well-off persons of the village and micro-regional social system are exploiting the lower status Toto 'clients' inequality among the Totos can be readily ascertained from the differential pattern of land holdings with mean holding size of 2.9 acre having a value of ± 4.4 standard deviation.

The impact of cultural contact and economic change especially extension of infra-structural facilities including electricity, health, regular bus service, transistor and television, road, post office and co-operative bank etc. have indeed significantly marked so much so that institutions and pattern of behaviour do reveal appreciable departure from the traditional mode. Nevertheless, the publicly avowed their allegiance to the traditional ways and rituals and norms be ignored, the Totos like other tribes are in transition.

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Agricultural Modernization and Environment : Some Reflections on Dilemmas of Development

RAJATSUBHRA MUKHOPADHYAY

Abstract : The orthodox model of economic development, in the idiom of 'growth', pays little attention to the ecological framework of resource utilization. This has become more apparent in the domain on agricultural development through new technology. In the post Green Revolution era, the environmental implications of this development requires serious thought. Present paper, without being original, looks into some of the isssues under 'development-environment' debate in the context of agricultural modernization in India.

It has been recently estimated that at the turn of the century our country will need about 225 million tones of food grains annually to feed a population that is growing by some 15 million or 22 per cent every year. The twin objectives of our agricultural policies during the past 35 years have been to achieve self-sufficiency in food grains and where a significant progress has been already made. In India, the expectation to increase agricultural output to overcome acute food shortage has led to a demand for agricultural innovations. The rationale behind this demand is that the application of new technology and modern production techniques through a 'package' approach is seen as an essential requirement for meeting the needs of an over expanding population. Therefore the whole attention has been given to 'grow more food' by adopting new agricultural technology.

There is now a growing realization of the fact that unless India's agricultural growth rate is significantly accelerated, the crisis of Indian planning will get worse. It has also been realized that the key to acceleration of agricultural growth now lies in giving a new technology and their fast adoption by the cultivators. But the possible trade-off between the goals of environmental protection and increased agricultural production presents a serious challenge to the agricultural development in India in terms of investments in agricultural development.

ENVIRONMENTAL CONSEQUENCES OF AGRICULTURAL MODERNIZATION : CONCERNS AND EXPERIENCES

The environmental consequences of agricultural development through new technology requires a serious thought. Odum (1971) characterizes agricultural development as a transformation of the ecosystem to reduce number of species and usually lower combined efficiency of nutrient recycling, higher but less stable rates of production, and low biomass stock relative to natural conditions. *Global 2000 Report : Entering the Twenty First Century* (Washington D.C. : Council of Environmental Quality, 1981) had observed that serious deterioration of agricultural soils will occur worldwide due to erosion, loss of organic matter, desertification, salinization, alkalization and waterlogging. It emphatically declared agricultural modernization or development as the cause and ecological or environmental degradation as an effect.

Through over-exploitation of soil and water resources, we have reached a stage where any further neglect and slackness in using said precious resources in a sustainable manner will not only restrict our ability to feed the increasing population, but also result in adverse environmental consequences which would not be easily retrived. The impact of heavy use of fertilizers and pesticides are well known today. The run-off nitrogen and phosphorus from excess use of fertilizers damaging water resources. Overuse of pesticides posing serious problems of air and water pollution and consequent health hazards. Survival of certain animals like local fishes, snakes, frogs and birds is endangered. Insects that control the pests naturally are going to be wiped out. There are examples the alarming rate at which our reservoirs are getting silted up, increasing flood-proneness of many areas, the greater disease vulnerability of crops and finally instability of our agricultural growth caused by extravantage use of new technology for maximizing productivity.

Noted economist Prof. M. V. Nadkarni says : the problem of negative externality is more complex in agriculture than in industry. In the absence of pesticides, crop losses could be significant, but much of the environmental cost of pesticide use is not borne by the user himself, and there is no easy way of identifying and compensating people who are victims of pesticide use (1987 : 361). Mention may be made that pesticide residues have been already detected in organic matter throughout the globe – from milk of nursing mother in America to the flesh of penguins in Antarctica.

A study of Rayalaseema in Andhra Pradesh showed that the draught and falling water-table there could be attributed only to over use of water and not a climatic change in the form of reduced rainfall. Pumpsets were installed at an explosive rate, and the increase in evaporation and run-off resulting from intensive irrigation caused water shortage (Olsen : 1987). Over-exploitation of ground water through digging and boring of too many wells might bring down the water table to such a level that the expected quality of water may not any longer available. Here, one may refer to the recent problem of serious health hazards among rural people caused by arsenious ground water in several districts of West Bengal. And for that, the massive installation of tubewells for irrigation has been found liable to a considerable extent.

Extension of area under cultivation has been the most significant factor behind the decline of area under common property resources (CPRs) like pastures. It is to be noted that area under pastures and other grazing lands declined in India from 14 million hectares in 1960-61 to 12 million hectares in 1980-81 (Govt. fo India : 1985). Scarcity of fodder and free grazing made worse because much of this land has been brought under cultivation. The loss of land under CPRs made it difficult to have rotational grazing and regeneration when very little land was left for grazing or none at all (Nadkarni, op. cit., 367).

A few intensive village studies also illustrate the negative environmental consequences of agricultural modernization. Mohanti for example, after making a revisit to his natal village Manpur in Orissa, writes with considerable anguish --the government is encouraging modern methods of farming, but at a price. Pesticides are sold in the market without any restriction. They are so poisonous that they have killed off the fish and much wild life. Even the jackles have gone. The frogs who used to fill the village air with their croaking are dead. Further no proper instruction has been given on the correct use of pesticides and farmers use them indiscriminately. No attempt has been made to inform people of the harmful effects they can have on crops and on health. Several people in the area have committed suicide by taking pesticides. There is no antidote for these poisons, and they are always fatal (1975 : 151-152).

A recent study of an eastern U. P. village by Prakash and Tripathi has shown that there have been considerable changes in village ecology owing to development interventions and greater emphasis on productive economic activities. Such an emphasis has brought changes in the nature of residence, settlement pattern, area of cultivation, water resources, and has led to deteriorating conditions of village lanes and personal space. Another meaningful finding of this study is - with increased emphasis on cultivation of land and economic gains of agriculture, there is no waste land in the village and which brought two important human problems. Firstly, there is no place left for attending nature's call and secondly, livestock have no common grazing ground and have to be kept tethered around residential houses. Both these factors seem to have contributed to congestion and filth around village houses, consequently increasing the number of incidences of seasonal and chronic illness. On the whole, the development intervention in agriculture in multiple ways is responsible for deteriorating state of environment in the village under study (1996 : 43-44).

The above experiences clearly indicate the current problems and dilemmas in reconciling agricultural development with ecological concerns. Recent years have however fortunately witnessed a new kind of awareness in development perspective. It emphasizes that 'real' improvement cannot occur unless the strategies which are being formulated and implemented are environmentally sustainable. The emerging idea of achieving continuous economic and social development along with rational management of environment presupposes a redefinition of objectives and methods of action. But unfortuantely, in the prevailing form of mode of production in Indian agriculture, such comprehensions are perhaps quite hard to internalize.

PREDOMINANT MODE OF PRODUCTION AND INDIAN PEASANTRY

Environmental problems of agricultural modernizations in India as such cannot be isolated from economic development in general and current mode of agricultural production in particular. As far as the new agricultural technology is concerned, its processes and problems need to be critically examined in terms of collision or collusion of peasant farming with the predominant mode of production in Indian agrarian sector.

We are frequently confronted by dynamics of technological changes generated by the wider societies which envelop and dominate peasant populations. So when peasant farming is labelled as something technologically traditional, stagnated or backward, it implies that the peasants are not responding favourably to the recommended technologies which are exogenous to them. Any adherence to traditional agricultural practices is considered anti-progressive on obvious reason. Confronted with the overall economic needs, like mitigating food crisis of the country, and providing urban centres with cheap food etc., the technological boost is given to increase farm productivity of the peasants. Therefore, it is expected that the peasants must adopt new technology discarding their inherited indigenous knowledge of cultivation (Mukhopadhyay, 1989 : 6).

Now commercialization is the main driving force behind agricultural development. Old agricultural practices are being replaced by the 'new strategy' based on modern inputs from the market. On the whole, the peasants are pushed to the wider market economy in terms of production and distribution. It is expected that their economic behaviour would be more guided by the principle of 'rational choice'. Thus the peasants who have responded to various technological innovations favourably, knowledgeable and resourceful and called 'progressive farmers'. In contrast, the others who do not, are called 'laggers', tradition bound, conservative, impragmatic and irrational. They have been identified as the fatalistic people with an orientation to 'limited aspiration'. Some have even gone to the extent of branding them as lazy, stupid, and incapable of either attaining or enjoying higher standards of living. Thus the market oriented agricultural development has enunciated a new categorization of Indian peasants based on their quality of innovativeness and nature of response to new technology.

Recently, the political scientist John Duncan Powell proposed a new definition of peasants. According to this definition - "A peasant society is composed of settled rural people, engaged for the most part in agricultural production, whose productive activities are influenced, shaped or determined to a significant extent by powerful outsiders" (cited by Silverman, 1983-26). Pawell's definition appears quite valid soon we look into the new technology and agrarian change in India. With the advent of profit maximizing technologies, the Indian agriculture has turned into a labour intensive enterprise. Even a cursory look at the NSS and FMS data makes it clear that the majority of holdings in most regions do not fall into the ideal 'peasant category'. The family based peasant holdings which neither exploit nor are exploited, are by no means the typical model holdings any longer in most regions (Patnaik, 1988 : 23).

Economist Christopher Freeman observed that the technology produced by capitalism, with its sophisticated production techniques, tends to be considered as technology proper without further qualification, as if older techniques did not count (cited by Vessuri, 1983 : 130). Or, to put it in another way, under capitalism, technology has been completely linked to the notion of progress : technical progress appears as a basic ingredient of capitalist accumulation. It might well be the condition that peasants are forced to seek technological advancement precisely because of their incapability to generate and appropriate surplus.

The prevailing approach to the use of land is typical of commercial speculation. There is no care for its conservation. The abusive use of chemical fertilizers, the non-utilization of traditional systems of rotation of lands for the maintenance of fertility contributed to the situation in which many soil contains dangerously low level of organic matter and in some cases they no longer support the current systems of production. One expert, for example, feels that the existing technology is fast approaching its limitations in so far as increasing aggregate farm output is concerned and forsees that the law of diminishing return will start operating beyond a point (Ghosal : 1986). Bhatia also writes : "The green revolution has helped achieving the self-sufficiency in food grains from the state of 'basket' case but failed to accelerate the agricultural growth rate" (1988). These are the realizations even though the post green revolution era shown remarkable resilience. The exigency of improving the quantity and quality of the products frequently coincides with the diminution of the soil fertility and, consequently, a peasant is forced to resort increasingly to the elements of 'capitalist' or modern agricultural technology. Given the intrinsic requirements of the production functions, the peasants adopt the technological package that is available in the input market, which is capital intensive but not environmentally or ecologically appropriate. Owing to the characteristics of the diffusion of such a technological package, a peasant tends to accept it as 'progressive' and 'scientific' though in reality it is not sustainable and environmentally sound. Thus being entangled by dominant forces of production set by wider economic structure, the Indian peasants destroy the very ecosystem upon which their subsistence is based.

DEVELOPMENT INDICATORS, AGRICULTURAL MODERNIZATION AND ENVIRONMENT

The origins of the concept of development may be traced to the nineteenth century idea of progress. The study of progress of mind and society through history - was greatly facilitated by the fact that the development of all societies is governed by same law. In his analysis of social progress and human development, sociologist Auguste Comte saw two components at work - what he called 'social statics' and 'social dynamics'. Social dynamics, according to Comte, is the study of continuous movements in social phenomena through time by a *theory of social progress*. In later period, however, the idea of 'development' has been succently captured by the concept of progress linked to economic growth and development. The growth game or growthmania has been dominating the economic thinking of development for a pretty long time.

The classical orthodox theory of development, in the line of Keynesian thinking inspired the building of several development models. The central premise of which is - development meant only the capacity of a static and retarded economy to generate and sustain an annual increase in GNP at the rate of 5-7 per cent (Dube, 1988 : 36). Accordingly a nation's progress along the road of development is judged by computation of GNP and PCI in monetary terms. The 'bigh-push' theory of Rosenstein-Rodan, emphasizing capital investment as the principal instrument of economic development, also owes its inspiration to Keynes.

Advancing technology is a precondition of continuous economic growth. Institutional and altitudinal adjustments with new technology are a must. So one set of social and cultural values, often characterized as 'traditional' was held to be an obstacle to economic development, whereas another set of values, characterized as 'modern', urged as more appropriate to modernization and development (Guha, 1994 : 6). Exactly that is why, the old agricultural practices even to the extent that they were ecologically sound are being replaced by the new technology based on modern inputs from the market. Commercialization of agriculture has already replaced the traditional techniques of cultivation and changed the attitude of peasants towards resource use and their management. In a market oriented agricultural system, the cultivators are compelled to deny their ancestral knowledge of the structure of specific and fragile eco-system and of stable relationships in their handling; and to adopt other productive behaviour that are 'rational' and 'scientific' in 'development modernization' estimation.

The orthodox model of economic development pays little attention to the distributive justice, cultural diversities, and long term impact of suggested technologies on the natural environment (Guha : Ibid.). National agricultural researches remain under continuous pressure for innovations that increase short term yields but not long term sustainability. It poses formidable questions for sociologists and social anthropologists in exploring the dilemmas of development in economic, socio-cultural and environmental terms.

CONCLUSION

Even four decades ago, there was hardly any critical concern for environmental degradation, pollution and conservation. Recent years have, however, fortunately witnessed a new kind of awareness in development perspective based on a realization that today's economic progress should not be at the expense of tomorrow's development. So, in current development thinking, there is an emphasis that 'real' improvement cannot occur unless the strategies which are being formulated and implemented are economically sustainable. The environment is a dimension of development, and must therefore be internalized at every decision-making level.

Environmental concerns of the Indian scholars of human development have largely been confined to global aspects of environment and greater attention has been paid to the problems of poverty, social disadvantage and deprivation. On the other hand, the pattern of symbolic relationship between organisers and their environment has been least touched upon. In an agrarian country, like India, the ecological implications of agricultural innovations and new technology also need to be examined seriously.

The possible trade-off between the goals of environmental protection and increased agricultural production presents a serious challenge to the economic development in India. In fact, ecology gave a big jolt to economists. So a section of them started advocating for 'sustainability'. Facing with serious problems of environmental degradation, they suggest that productivity should be measured in terms of its impact on the environmental asset on which sustained agricultural growth depend. Productivity measures in the context of integrating economic and ecological sustainability would help in sustaining environmental capital stock (Bhattacharya : 1993; Kahlon : 1996). In other words, sustainable agricultural development refers to maintenance and enhancement of productivity on a long term basis and therefore, should use improved and eco-friendly technologies for development in agrarian sector. For sustainable development, such agricultural inputs are required which would be environmentally capable and ecologically efficient. The alternative agricultural technologies and farm practices need to be economically viable and environmentally sound.

Even when there has been much talk in recent years of 'alternative' patterns of development which would be egalitarian, culturally sensitive and environmentally sustainable; the continuing dilemmas of development pose formidable questions for sociologists and social anthropologists. They are yet to participate appreciably in the 'development-environment' discourse.

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Folk Taxonomy : Environment and Empiricism

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Abstract : "Folk-Taxonomy" is almost a new inclusion in the domain of Anthropology specially in Indian context. Here the authors have the intension to deal with different views on the principles of folk taxonomies, given by number of researchers working in this domain. In a particular environment i.e. in village near Ghatsila, east Singbhum, Bihar, the authors have tried to apply these views and analysed the facts exclusively from emperical point of view. The authors have placed some evidences. These evidences are somewhere in support of and somewhere on the contrary to the conventional views. Here the authors' intension is not to put any separate principles of taxonomy but to throw some light on the perception of the *Santar* (Eng. *Santal*) community residing in a given environment about the plant and animal *taxa* around them.

The term 'Folk Taxonomy' has entered into the domain of Anthropology almost recently. Since about 1954, modern field research has been carried out by a number of ethnographers and biologists in an effort to understand man's conceptualization of his natural and social environments. The richness and diversity of man's variant classifications of experience have often led ethnographers to emphasize the differences between cultural expressions of knowledge (Berlin et. al, 1973). Data coming out of several researches on ehtnoscience often reveal that the semantic structures uncovered by such research are hierarchic in their formal characteristics. They resemble the classificatory structures conventionally employed in the biological sciences and have generally been termed (folk) taxonomies (Conklin 1962a, 1962 b, 1964; Durbin 1966; Frake 1961, 1962; Kay 1966; Lounsbury 1964).

MEANING OF FOLK TAXONOMY

Before dealing with the principles of folk taxonomy, the authors feel it necessary to define and give a concrete sense about the folk taxonomy. Folk taxonomy can be defined as "A system of monolexemically labelled folk segregates related by hierarchic inclusion (Conklin 1962a : 128).

There is a mild controversy over this definition. Some researchers raised the question that, is it necessary for the segregates or categories to be monolexemically labelled? It is hard to solve this controversy. Therefore, the authors think it better to throw some reflections on different analyzable terminologies in the domain of folk taxonomy.

LEXICOGRAPHIC PRINCIPLES

In the lexicographic treatment of folk classification, the researchers are concerned primarily with

1. The identification of relevant syntactic (the way of framing sentences and phrases) segments.
2. The identification of fundamental semantic units in specific contexts.
3. The delineation of significant sets of semantic units in particular domains, and
4. The translation of these units so that important semantic relatoinships will not be obscured.

SYNTACTIC SEGMENTS

To identify relevant syntactic segments it is better to treat the categories or segregates as a lexical unit, or lexicon. Lexicon as a class comprises forms, which are, for the most part, unique "single word" which can be shown to be linguistically distinct (Berlin et. al. 1973). It is convenient to refer to these elementary lexical units as lexemes (Goodenough 1956). These lexemes can further be divided into two groups :

i) The first group comprises forms which are linguistically distinct, semantically unitary names.

ii) The second group comprises members of the first class in variously modified form.

The members of the first group can be referred to as primary and of the second group as the secondary lexemes (Berlin et. al. 1973).

Conklin (1962) named these subdivisions as a) Unitary lexemes and b) Composite lexemes.

The environment the authors have been considered is the forest hill region in the East Singbhum, Bihar, in the vicinity of Ghatsila. The folk the authors have dealt with is the *Santar* (Eng. Santal) inhabitants of Dhatkidih, Digri, Amainagar, Mahalidih villages. The authors were partially successul to test the general principles of the folk taxonomy, the result of which has been discussed ut infra.

Look at the *Chede* (bird) life form of the *Santar* which shows that the primary lexemes can be analyzed semantically. Some are clearly simple expressions which are unanalyzable linguistically, such as the generic taxa *Parwa* (pegion), *Miru* (parrot). These lexemes are unanalyzable because the word *Parwa* does not convey any idea about what actually it is. It is not possible to analyze the generic form Parwa linguistically but when the informants show the generic it is seen that it is a bird. Other primary lexemes are linguistically analyzable and can be illustrated by such expressions of generic like *Jojodaare* (*Tamarindus indicus*).

Analyzable primary lexemes can be divided easily into two obvious classes. One group, comprising forms distinguishable in that, one of the constituents of each expression indicates a category superordinate to that of the form in question, for instance *Jojodaare* is a kind of *Daare* (erect plant). These expressions are *productive primary lexemes.*

The second group, comprising forms distinguishable in that expression, no constituent of which marks a category superordinate to the forms in question. This second group is not so prevalent among the folk the authors studied so far.

Secondary lexemes are identifiable in that form, one of the constituents of whose expressions indicates a category superordinate to the form in question. Among the *Santar* in plant life form, the specific *Majhi huru* indicates a type of paddy while in bird life form, the varietal *Punde Parwa* denotes white pegion. Fig-1 represents the relationship between different lexical units in both plant and animal kingdom found among the *Santar* folk of the said environment.

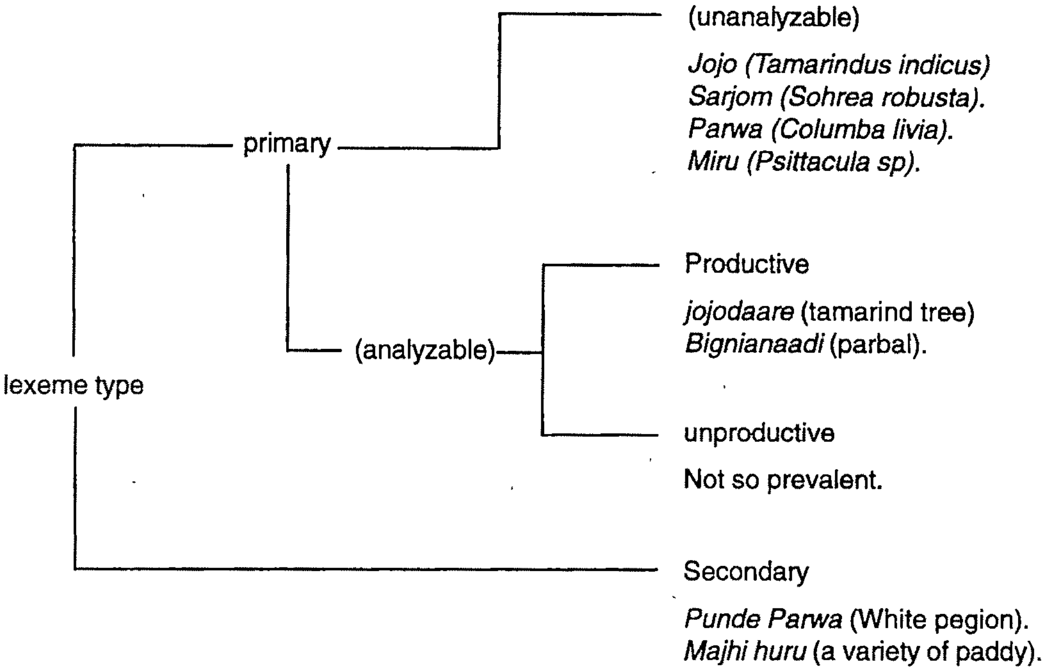

Fig 1; Relationship between lexical units of *Santar* folk taxonomy.

To identify the fundamental semantic units in specific contexts to delineate significant sets of semantic units in particular domains the authors have considered some hypotheses which deal with various aspects of folk biological classification and nomenclature. If the hypotheses can be summarized, nine main principles can be framed. They serve as the tool of understanding *Santar* biological classification.

The authors here tried to present evidences in support of or against the conventional hypothetical principles of talk taxonomy.

1) In all languages it is possible to isolate linguistically recognised groupings of organisms of varying degrees of inclusiveness. These classes are referred to as *taxa.* In the Santali language of the *Santar* folk also this kind of linguistically recognised groupings were isolated like *Daare* (plant) and *Jib* (animal)

2) Taxa are further grouped into a small number of classes known as taxonomic ethnobiological categories. These ethnoniological categories, definable in terms of linguistic and taxonomic criteria, usually not more than five.

   In the given environment also each taxa can be divided into five ethnobiological categories and in taxa the sixth category that is the intermediate category comes into expression. The ethnobiological categories are

   i) Unique beginner
   ii) Life-form

iii) Generic
iv) Specific and
v) Varietal

3) The five universal ethnobiological categories are hierarchically arranged and taxa assigned to each rank is mutually exclusive, except for the unique beginner, which is only one in number. In this given environment also the five categories are hierarchically arranged (Fig 2).

Rank zero	**Rank 1**	**Rank 2**	**Rank 3**	**Rank 4**
Unique beginner	Life-form	Generic	Specific	Varietal

Fig 2; Hierarchical arrangement of five ethnobiological categories.

Here Rank 4 is exclusively generalized into Rank 3, Rank 3 into Rank 2, Rank 2 into Rank 1 and Rank 1 into Rank zero. But the Rank zero is only one in number and have no hierarchical identity (Sengupta and Ghosh, 1994).

4) Taxa of the same ethnobiological category characteristically, though not invariably, occur at the same taxonomic level within any particular taxonomic structure. The *Santar* folk taxonomy also maintains this taxonomic level.

5) In folk taxonomies it is quite common that the taxon found as a member of the category unique beginner is not labelled linguistically by a single habitual expression. The authors differ. But it is noted that among the *Santar* Unique beginner both in plant and animal taxa are linguistically labelled. Unique beginner for the plant taxa is *Daare* and that of animal taxa is *Jib.*

6) *Taxa* which are members of the ethnological category "life form" are invaribaly few in number, ranging from five to ten, and among them include the majority of all named taxa of lesser rank.

In the *Daare* (plant) and *Jib* (animal) taxa found among the *Santar,* the number of life-form is six and five respectively, that is within the number assumed in the hypotheses (Fig. 3 & 4).

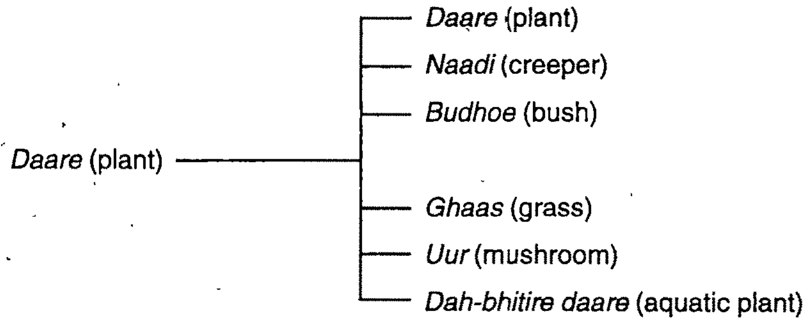

Fig 3; Identified life-forms among the *Santar* expressing *Daare* (plant) taxa.

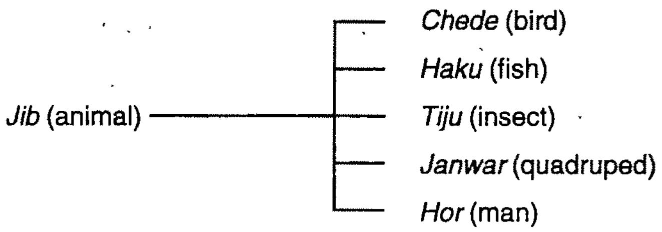

Fig 3; Identified life-forms among the *Santar* indicating *Jib* (animal) taxa.

7) In typical folk taxonomies, taxa are members of the ethnobiological category. "Generic" are much more numerous than life form taxa but are nonetheless finite.

   In the given set of environment the evidence in support of this principle is much more prevalent. In plant taxa life forms are six in number (Fig 3). The authors are in search of genera and they hope to come to the finite situation. Number of genera found among the *Santar plant* taxa is more than 200 much less than 500 classes as prescribed in the general principle.

   According to the principle the generic names are labelled by primary lexemes like *Jojo (Tamarindus indicus), Babla (Accasia aradica), Madkom (Bassia latifolia), Sarjom (Shorea robusta).*

8) Taxa which are members of the ethnobiological categories : "specific" and "varietal", in general, are less numerous than taxa found in members of the generic category.

   Members of the *Santar* folk of East Singbhum can classify only the generic name Huru (paddy) into "specific" and "vanetal" category. In *Jib* (animal) taxa precisely the *Chede* (bird) life-form is distinctly classified upto varietal level. (Fig. 5 & 6).

   In the conventional rule both specific and varietal taxa are labelled by secondary lexemes, for instance *Punde Parwa* (white Pegion), *Risa sim* (fowls with reverted feathers), *Beladangia miru* (black necked Parrot).

9) Intermediate taxa, i.e. the taxa included in one of the major life form taxa found to be invariably rare in folk taxonomy.

   Whatever be the extent of rarity is, in the given environment intermediate taxa is found. In the plant taxa aquatic plant is a life form but the term used by the *Santar* folk to designate the aquatic plant is not a primary lexeme. Aquatic plants are designated by *Dah-bhitire-daare*. The prefix *Dah-bhitire* means anything living in as well as under water. Now several other life forms like some *Naadi* (creeper), *Uur* (mushroom) are found in water and swampy area. The folk is not ready to classify them distinctively, they are all included in the intermediate taxa *Dah-bhitire-daare* (Fig 5) (Sengupta and Bandyopadhyay, 1996). This can be included within the "Covert Category" (D' Andrade, 1995, Berlin et. al, 1968).

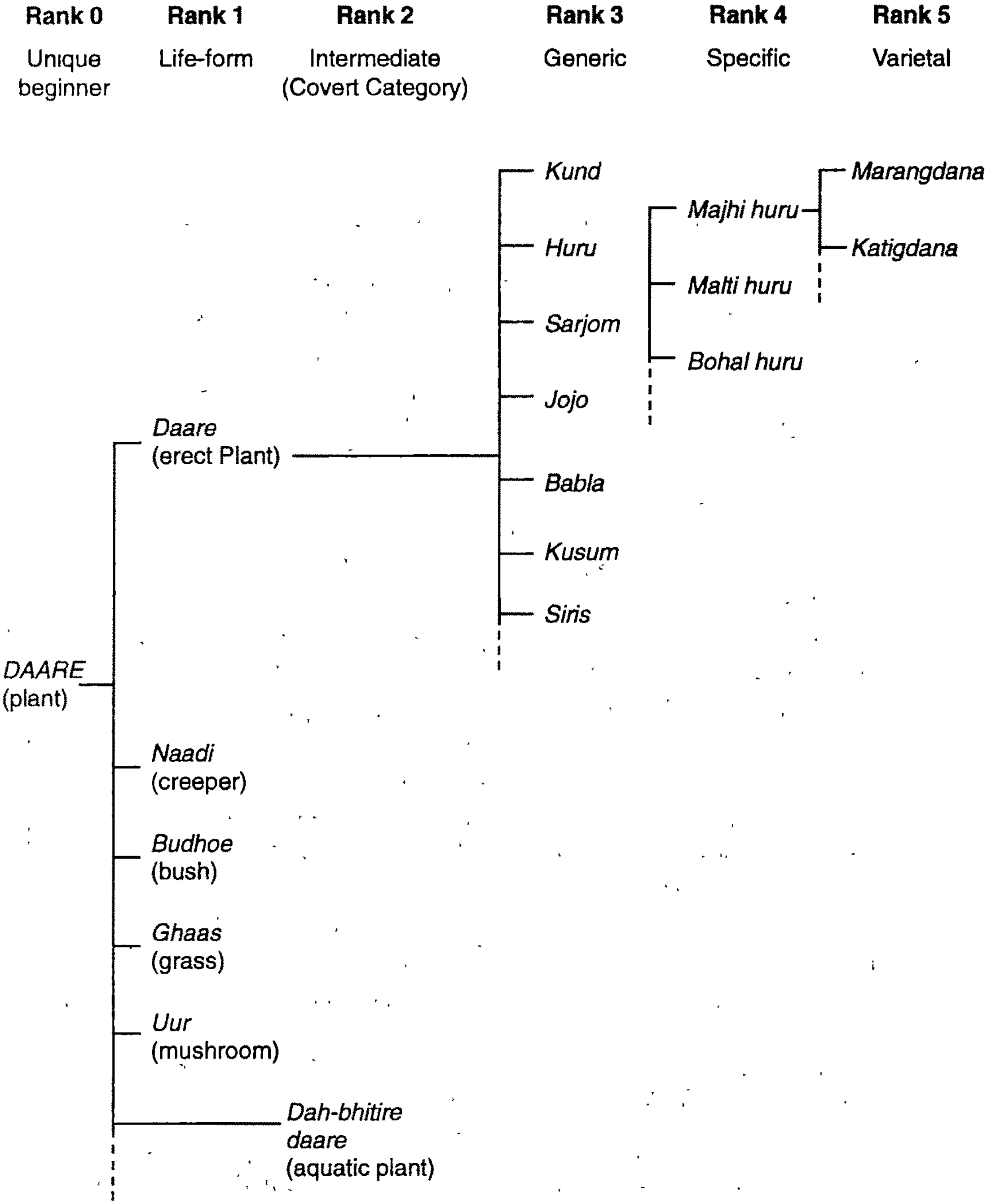

Fig 5 : Folk-Taxanomy of *Santar Daare* (plant) Segregate.

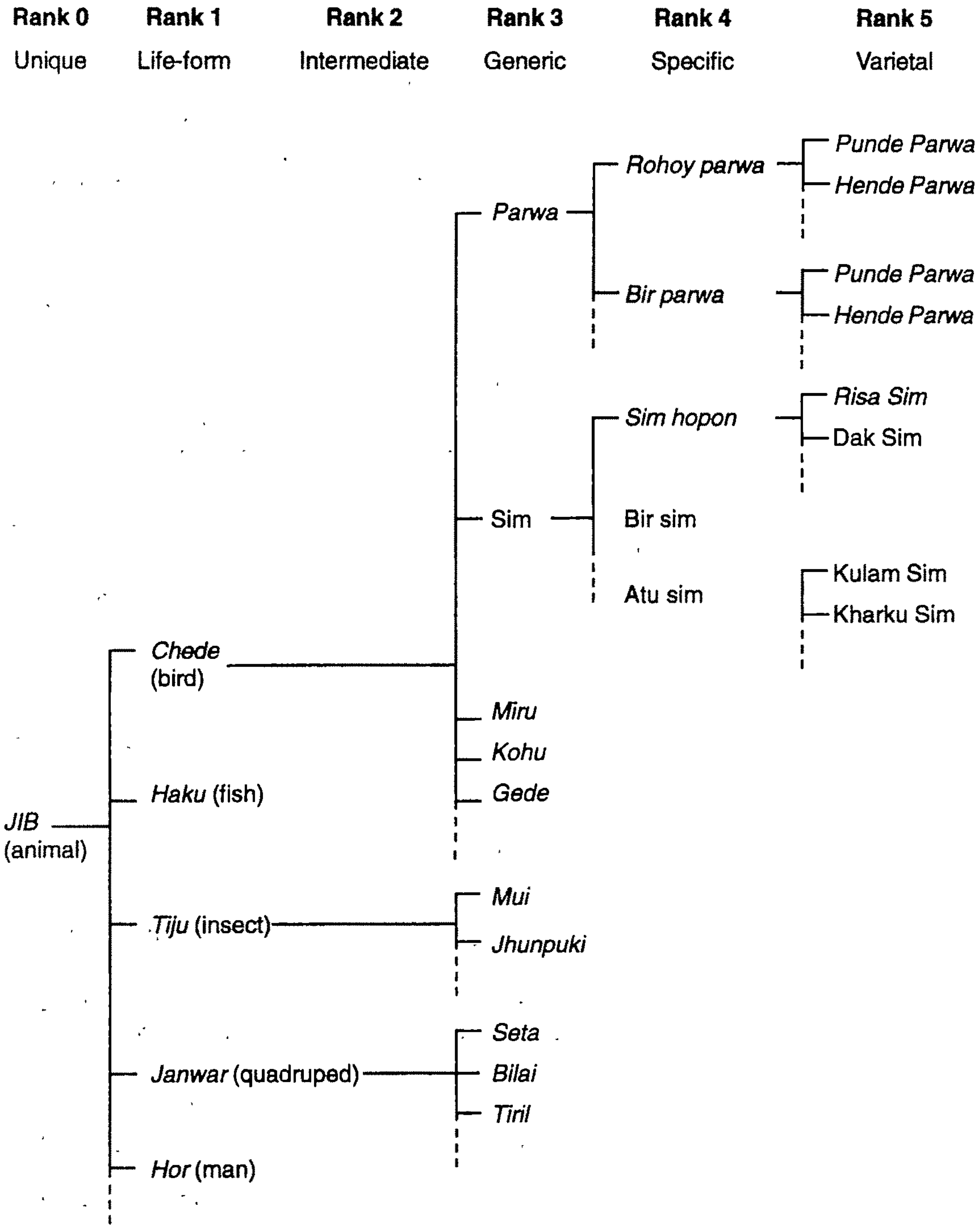

Fig 6 : Folk-Taxanomy of *Santar Jib* (animal) Segregate.

The folk taxonomy is based on two broad lexical units or taxa that is "life-form" and "generics". The total unique beginner category is classified through these two taxa.

The life-form category is the preliminary classifying taxa of a primary lexeme or unique beginner. The life-form identified in the plant taxa are called botanical and in the animal taxa are called zoological life-form.

The first botanical life-form to appear in any language seems to be "tree" (Atran, 1985). In *Santali* language also *Daare* (tree) is the botanical life-form, but the consideration for this is somewhat strikingly different.

According to hypothetical point of view 'size' seems to be the universal consideration underlying distinction between life-form (Brown, 1977).

In case of the *Santar* 'woodiness' and 'rigidity', precisely the stem habit are the basis of identification and distinction between life-forms (Fig 7) (Sengupta and Bandyopadhyay, 1996).

This type case is happened to be found in residual life-forms, i.e. the life-forms which comes later in the perception of the folk because of their less importance in the folk economic sphere (Bartlett, 1926).

Residual life-forms are defined by a small set of "abstract features" primarily stem habit and leaf-form (Hunn, 1976 : 519).

Life-forms	**Woodiness**	**Rigidity**
Daare (erect plant)	W	R
Budhoe (bush)	$\overline{W}$	R
Ghaas (grass)	—	$\overline{R}$
Naadi (creeper)	$\overline{\overline{W}}$	$\overline{\overline{R}}$
Dah-bhitire-daare (aquatic plant)	—	—

Fig 7; Identification of life-forms in respect of "stem habit".

Here W > $\overline{W}$ > $\overline{\overline{W}}$, R > $\overline{R}$ > $\overline{\overline{R}}$.

Distinction between the nature of life-form and generics is a debatable event in the sphere of conventional folk-taxonomy.

Psychologically, life-form taxa represent what Hunn would call *deductive categories* (Berlin, 1976 : 385). Logically distinctive features are necessary to define but not to identify a life-form.

Hunn (1977) argues that the defining features of deductive categories must be linguistically codable in order to be communicated without direct reference to examples of the category.

In this respect life-forms identified by the *Santar* are undoubtedly included within the deductive category. Only presence of some morphological features are considered sufficient for the identification of a particular life-form, say for instance *Daare* is an erect and woody plant, *Naadi* is a less woody plant with soft stem and so on. This kind of definitive deduction is not so prevalent in the generic level as the case seems to be in the hypotheses regarding this fact, One *Santar* person cannot define *Jojo* (*Tamarindus indicus*) but can define *Daare* (erect plant) and can include *Jojo* within the *Daare* life-form for its morphological features. This is because the "concept" associated with a life-form supposedly consists of a semantically primitive abstract features, whereas the generic concept is represented by a whole-image pattern abstracted from the experience of many instances (Atran, 1985).

The study has been done by using the conventional hypotheses as the tools of the work. But the data gathered by the authors have been analysed empirically. Arriving at a point of conclusion in this kind of studies is too hard as the methodologies used for collecting information in this sphere is not within a prescribed tract rather spontaneously derived. The spontaneous invention of method to reach the concluding point is sheer empiricism so far the authors' effort is concerned.

From the above mentioned facts the perceptual level of the *Santar* community in question was analysed and the universality of several hypotheses regarding folk taxonomy was focussed through empirical verification.

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Environment Conservation and Tribal Development

AMAL KUMAR DAS

Abstract : About eight per cent of the total Indian population are tribes. A good number of them live in and around the forest regions. They earn their livelihood from collection of forest products and other minor forest produces (such as, gums, resins, spice, medicinal plants, honey, fibres, etc.). Gradual shrinkage of forest areas and continuous exploitation of resource base are not only threatening their traditional life style but also leading to environment degradations. The tribal people are forced to discard their traditional way of living and to move to industrial working sites and cities. As a result, their traditional skills and knowledge about the utility of plants and animals are being wiped out.

Protection and improvement of environment would largely depend on ameliorating the economic condition of the tribals by involving them as active partner in various forest operations (such as, aforestation, harvesting, collection and processing of minor forest produces, etc.). Appropriate use of knowledge and experience of tribal folk and reorganisation of their traditional skill may add a significant dimension to the development activity in these fields.

The disruption in the man and environment relationship and progressive degradation in the environmental system calls for adoption of a strategy for an integrated development. Tribal environment is intimately associated with forestry. Majority of tribal people still live in and around the forest regions and the forests provide them food, medicine and other material requirements. They also earn their livelihood from collections of minor forest produces (e.g., gums, resins, spices, medicinal plants, honey, fibre, etc.).

About one-seventh of the world population live in India in about six lakh villages. The forest area in the country is reported to be 22.7 per cent of the total land area of the country (74.74 million hectares). The per capita coverage is 0.109 hectares only which is far below the world average of 1.04 hectares (Roy Burman, 1982 : 101).

The tribal population constitutes about 8 per cent (7 crores) of the total population of India. More than 60 per cent of them live in and around thd forests. There are about 3000 forest villages with nearly 2 lakh tribal families living in those villages.

I

The working Group on Development and Welfare of Scheduled Tribes during VIII Five Year Plan observed that the National Forest Policy, 1952 did not take into account seriously the close relationship between tribals and forests and almost completely ignored the symbiosis in this relationship. Even the claims of the tribals in forests which they had enjoyed for generations were subordinated to the national interest and those were reduced to a mere rights and concessions. The implementation of the policy in practice, resulted in an over-exploitation of the forests in the absence of any framework for increasing the area under forests. Diversion of forest land to non-forest purposes was permitted liberally upto 1980 when the Forest (conservation) Act had to be enacted to save the dwindling of the forest base further in the country. The problem of tribals, who depended on the forests in many ways, were thus accentuated on account of the Forest (Conservation) Act, 1980 (Draft Report : 65-70).

The committee on Forest and Tribals in India reported that during 1951-75, the forest area in India receded by 4.134 million hectares, a loss of 0.161 million hectares every year or

441 hectares per day. It is estimated that only 10 per cent of the country's forest areas are capable of performing protective, productive and ecological functions (Roy Burman, 1982 : 101).

With the introduction of the new Forest Policy, 1988, the prevailing drawbacks in National Forest Policy of 1952 were removed to a considerable extent. Keeping in view the symbiotic relationship between the tribal people and the forests, the new policy emphasized that the primary task of all agencies responsible for forest management should be to associate the tribal people in the protection, regeneration and development of forests as well as to provide gainful employment to people living in and around the forests (Draft Report, 65-70). The consensus among the ecologists, planners, administrators, foresters, sociologists has been that the gulf between the two can be bridged to the benefit of all, if the tribal is involved as an active partner in various forest operations (like afforestation, harvesting, collection of minor forest produces, etc. (Roy, Burman, 1982 : 3).

II

Due to the shrinkage of forest areas and continuous over-exploitation of resource base, many of the tribal people are forced to discard their age old way of living and drift into fringes of the industrial working sites and cities. Their traditional skills and knowledge about the utility of herbs, plants and animals are being gradually wiped out. They are quite often utilised by industry as well as traders for exploitation of the natural resources.

A study conducted in 1990s in tribal areas by the Department of Environment, Govt. of India, reveals that a veritable treasure of wild species with potential for sustainable use is available in the forests of which the tribals have specific knowledge. Within two years of its study, nearly 3,300 plant and animal species used by tribals for food, fodder, fibre, medicine, clothing, shelter, etc. have been collected from different tribal belts of the country [Note, 1990 : 1].

The tribal people are not only familiar with a number of biological species around them but they also possess some understanding of ecological inter-relationship of the various components of forests. Appropriate use of knowledge of tribals in forestry operations and minor forest produce may add a significant dimension to the developmental activity in these fields. The development of forests and well being of tribals are interdependent and deep-rooted.

The traditional preservation methods like taboos or totems etc. observed by tribals to ensure regeneration of plants and animals need to be appreciated scientifically and if possible re-employed. Indian societies had tradition which promoted conservation of plants and animals. These cultural values and ethics need to be promoted in ultimate interest of conservation of our flora and fauna.

We are acquainted with a few food plants in general (e.g., wheat, rice, maize, millet, etc.). But there are various other less known food plants in various parts of the country which tribal people consume as food. Such knowledge can be profitably utilised in finding out new sources of food. Similarly, there are a number of plants and animals which serve as important source of medicine, shelter, material for making articles of daily use. This knowledge may also be utilised for the benefit of the society as a whole.

III

It has been observed that large scale felling of forests has resulted in hardships to tribals particularly of fuel, fodder and economic benefits.

Forest lands which are otherwise left unused or ceased to yield small timber may be suitably converted to pasture lands for grazing of adjoining cattle population of the tribals. This will simultaneously give fillip to animal husbandry in tribal villages. Unless alternative resource for grazing is created, family-based scheme of house dairy becomes practically non-viable.

A symposium sponsored by World Bank and hosted by Visva Bharati in January 1997 reflected that West-Bengal is rich in livestock but poor in fodder output, hence the state's low productivity in egg, meat and milk. The state produces only half of the quantity of milk and one-fourth of the meat required. The answer to the problem is green grass. Only 1.5 per cent of the State's agricultural land is under fodder cultivation as against the national average of five per cent (Statesman, 1997).

Similarly, for tussor raising their requires special plantations of host trees, for lac cultivation certain specified trees are required. These plantations may be done either in the peripheral areas of the forest or under social forestry in the villages of tribal concentrations.

In some areas (e.g., Sundarban) vast tract of land has been reclaimed through deforestation. This has virtually turned the human habitations devoid of trees. There is scope for farm forestry. This will help in growing fuel wood and logs for local consumption.

Social forestry is designed to meet the primary needs of tribal and rural population as opposed to the needs of industry and the urban elite. Action research should be planned with a view of harnessing traditional skills of the tribal and indigenous population keeping in view the optimisation of production and reduction of hazards of environmental degradation (RoyBurman, 1982, 108, 110).

In view of diversity of the needs of tribal population (food, fodder, fuel, medicines, shelter material, etc.) monoculture of forest plantation in tribal areas should be discouraged. Such areas should be afforested with natural mixed vegetation. Mixed forestry should be the key idea for growing other Minor Forest Produce (MFP) which will help in direct and sustained employment of the tribals. Under the MFP Programmes fibre (Chihor lata) and floses (Semul) will directly help the tribals. Semul wood is used for match boxes, Flocses from Simul fruits are used for stuffing pillows and ropes are prepared from chihor lata (Das & Basu, 1994 : 174).

Under Oil seeds programme, plantation of Sal (*Shorea robusta*), Mohua (*Madhuca longifolia*), Karanj (*Pongamin Pinnata*) and Neem (*Azacirachta indica*) should be given due weightage for their commercial potentiallty and environmental make-up. Oil extracted from Sal Karnel is used in soap industry, mohua and neem are established industrial raw materials, and karanj oil has got immediate use as lighting fuel and in other purposes. These are the species which deserve importance in social forestry and environmental make-up of the tribal habitations.

Minor Forest Produce (MFP) includes all items of forest produce other than wood. MFP collection generates employment largely during the non-agricultural season when the employment and under-employment problems are acute.

The idea of Recreation forestry is often talked for urban development. But this can be introduced in tribal areas too. The whole school environment of the tribal areas may be changed and made attractive to the pupils and teachers by meticulous designing; planting shrubs along the boundaries and with putting a few flower trees. This should be a compulsory programme under social forestry. Mini parks (protective groves) may be introduced in nearby villages (Das & Basu, 1974 : 274 & 275).

IV

Establishment of industrial complexes often leads to displacement of tribals disrupting their traditional way of life and causing maladjustments. This is the surest way of wiping out the environment in its natural setting.

The discouraging feature is that many of these industries cause pollution hazards in the surrounding environment. Industrial affluents are being discharged by those industries through canals to the river and other tributaries. The discharged affluents and suspended solids not only cause pollution in the aquatic environ but disturb the natural harbour of fishes to such an extent that the traditional fishing activities becomes rarity.

Owing to indiscriminate use of deadly insecticides in the fields, larvae of the crustacea are fast disappearing, thereby the tribals are deprived of mollusca and bivalves from the rice fields during rainy season. Absence of this value nutrient is causing great loss to the poor diet of the tribals (Das & Basu, 1974 : 275, 276).

This calls for preservation of fauna, both terrestrial and aquatic in nature, by adopting anti-pollution measures.

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A Study on Brass working communities in Pallahara Region : An Anthropo-Archaeological Approach

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Abstract : A rich chalcolithic site has been discovered in Kanjipani area of Orissa. The assemblage consists of chipped and ground celts; a number of unfinished celts and by-products of celt manufacture; large number of tools, viz., saw, scraper, denticulate, mortar and pestle; numerous waste flakes; a number of potsherds; terracotta peices, charcoal and above all some bangles and rings. The tools are made on altered basalt

The archaeo-metallurgical analysis of the bangles has shown that the metal is brass having 54% of Copper and 33% of Zinc. Tin is 8.5%. This is interesting for the concept of metal age in eastern India.

Brass making has got a long history in this region. In this paper a study is made of the brass working process among a caste group in Pallahara region called the Sidhrias. These people make brass objects by lost wax process. For wax they use *shal* resin. The brass objects made by the Sidhrias have got intrinsic social value.

An anthropological study is made here to understand the brass tradition in this area in the light of the chalcolithic objects found from Kanjipani.

INTRODUCTION

Information on metal age in Orissa is rather scanty. Whatever material is found had been carefully studied by Yule (1989). Most of the findings are scattered and stray in nature. Only rich site is Sankarjung. This site has yielded bronze objects (Yule *et al*, 1989). A very rich metal age site was discovered from Kuanar near Kanjipal (Ray *et al*, 1996). The assemblage from Kuanar is different from those of Sankarjung. The celts from Kuanar are comparatively roughly made. They are rather functional than beautiful. The first author has worked on the findings of Kuanar for the last five years. The stone tools had been analysed and typological classifications were made. The potsherds and terracotta objects were studied. The metal objects, viz, ornaments were subjected to archaeometallurgical analysis. Interesting result came out. The ornaments were made of alloy. The composition of alloy showed that it was brass. Althogh tin was present in it zinc formed the major portion together with copper. This finding has opened up some problem.

It is generally believed that bronze was the first alloy. This is true for Western India but tin is not so common in Eastern India. Moreover this region excells in brass and bell metal. Perhaps brass has a very early origin in this area. After or together with copper, brass formed an important aspect of early metallurgy here (Ray, 1994).

Tradition of brass is quite old in the area. There are some indegenious methods of preparation of brass objects. The brass objects thus prepared have a very important place in the society. They have intrinsic social and ritual values among the local people. The makers of brass objects in Orissa are distinct by caste. They are known as Sidhria and are mentioned in the Census (1961) as a caste practising household craft.

In the present context a study is made among the Sidhrias for understanding of the method of manufacture of the brass objects. This is an attempt to learn about any parallelism that may exist between the early metal working and the present work. Farther enquiry is made about the continuity of the tradition through generations.

In no way this work be considered as the one giving any concrete clue to the ancient metal craft and tradition in the context of present day Sidhria communities.

THE SITE KUANAR

The site is located on a mound on the right bank of a tributary called Masani Nalla of Ghumura river, a tributary of Baitarani. The mound is oblong in shape. A number of runnels are found on the northern side of the mound. Southern side of the mound is very steep. The soil of the upper portion of the mound is yellowism brown but the eroded lower portion is red in colour. The texture of the red soil is coarser than the yellowish soil. It is mixed with grit and sand.

Stratigraphy at the site is not much different from what is observed at Neolithic sites of eastern plateau (Bellwood *et al*, 1984). Topsoil is thin, black in colour and rich in humus. Soil below is reddish in colour, coarse, sandy in texture and mixed with grit. Tools are coming from the red soil. Wherever the top soil is eroded the tools are lying on the surface. Large amount of materials are coming out as a result of erosion of top soil along the slope.

The assemblage pattern suggest a factory as well as habitation site for Kuanar. The artefacts found are mortar and pestle, flake tools, waste flakes, celts, potsherds, terracotta pieces, some brass bangles and rings. The potsherds are red and buff in colour, coarse to medium in texture, straw and grit tempered. Some pots are even slipped.

The most interesting objects are the bangles and rings. The bangles are open at one end. Designs are very simple. Usually it consists of parallel lines arranged at equal intervals along the width of the bangle. Another variety has got diamond shaped designs along the periphery of the bangle.

Associated with the bangles are celts, flake tools, blads and cores. There have also been a large number of waste flakes. The celts were made up by chipping and grinding. No polishing have been found. The assmeblage as a whole presents a neolithic appearance. The brass bangles are the exceptions.

The bangles are made by crude method of casting, apparently from the available ore in the form of chalcopyrite. The bangles were subjected to archaeometallurigical analysis in the Metallurgy Department of Jadavpur University under the supervision of Prof. Monoj K. Mitra and by B. Bhattacharya. Analysis was done in Atomic absorption spectrometer, Perkin Cliner model No. 2380. The reports showed that 54% of the alloy was copper, 8.5% tin and 33% zinc. Iron and lead were 2.5% and 1.0% respectively (Ray, 1994).

The presence of iron and lead in good percent indicates that probably the alloy was prepared in an age old indigenous method of alloy making. The common copper ore in the area is chalcopyrite. The alloy was prepared by simultaneous reduction of chalcopyrite and lead-zinc sulphide over charcoal and wood fire. In recent alloy of brass such a high percent of tin is not found. The analysis show that the alloy is primarily brass with quite high amount of tin. The alloy contains lot of impurities and reveal cast cored dentritic structure (Ray, Bhattacharya *et al*, 1996).

A detailed metallurgical picture may add knowledge to the nature of alloy making during chalcolithic cultural stage in Eastern India. Brass as an alloy in India is recorded from a very ancient time. There are indigenous ways of preparing brass and brass objects. Folk people in Eastern India are famous for preparation of brass objects by indigenous methods. In all probability we had a brass age instead of bronze age. Though it is a little early for such sumise, there is need for farther work in this line for clarification of exact nature of early metal age in Eastern India. With this proposition in mind the present work among the Sidhria community had been conducted.

The Sidhria community is included in the census handbook of Dhenkanal district of 1961. They are considered under scheduled caste category. There economy in the handbook is given as household craft. No farther elaboration is made on that. Local people call them as Sitharis. This rhymes well with the caste name of brass workers of Manbhum district called the Thentharis (Sinha et al, 1961). Risley (1892) did not mention this group. No detail is available regarding Sidhrias/Sitharies of Dhenkanal district in the recent study of "Peoples of India" (Singh, 1993). Other metal working communities like the Aganas (Elwin, 1942) and Asura (Leuva, 1963) are tribals.

For the present study only the Sidhrias living in the former Dhenkanal district are considered. Sidhrias are spread all over the former Dhenkanal district. The extent of Sidhrias are from Athmol to Telkoi, Khamar and Suakati. Some of the villages where Sidhrias live are near the site Kuanar. They are Suakati, Jhupra, Jothalpur, Deshpur, Chakraposi, Pongachira, Chingrimunda, Singipur, Muktaposi and Patharkhumba.

General occupation of the Sidhrias at present are agricultural labour. Some people have taken up other crafts and are working as goldsmith, mason etc. Very few people are continuing with the traditional craft of brass working.

THE VILLAGE STUDIED

Data is collected from two villages situated near Pallahara town. They were Machurigaria and Jhimripali. In fact it is only in Jhimripali that the authors were able to find out two families who were still manufacturing brass objects by lost wax process.

It is found after the present survey that Sidhrias live in villages which are heterogenous in nature. The villages are composed of communities having various social status. Most of the communities belong to artisan groups.

The village Machurigaria is quite large. Communities living in the village are Dom (basket maker), Kulaha (mud and clay carrier), Pan (clothes merchant), Kurmi (Potter), Mahato (cultivator), Kura (brick maker) and Sidhria (brass worker). In reality none of the seven households of Sidhrias follow their traditional craft. Most of them are daily labourer in agriculture. One man has left the village and is working at a gold shop at Athmol as a goldsmith. Some others have taken up masons's job.

The other village Jhimripali is very big in size. It is divided into 13 subdivisions, locally known as 'Shahi'. The shahis are nothing but clusters of households belonging to the people of same communities. They are, Gour (cowherd), chasa (cultivator), Kurmi (potter), Pano (outcaste), Barico (Barber), Mahato (cultivator), Brahmin (priest), Munda/Kolha (tribal), Pike (Khandait-warrior), Dhoba (washerman), Bhuinya (tribe), Sahara (tribe), Teli (oil maker) and Sidhria (brass worker). Out of total of 227 households only 11 households belong to the Sidhrias. A total of 59 Sidhrias live in the village. 28 are male and 31 are female. Out of these only two households are actively engaged in brass working.

The objects made by the Sidhrias are locally known as 'Jagor'. In the village Jhimripali Kokil Sidhria together with his family and Harihar Sahu are actively engaged in "Jagor" manufacture. Harihar Sahu is about seventy years old. He is the only one in his family who is carrying out with his craft. An extension of the shaded veranda is used as a workshop. At Kokil's house the workshop is a spacious one with all the four sides open.

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Information regarding brass working is gathered by means by interview, narration and participant observation method. Considering time limitation and the process of observation order was placed both to Rabi Sidhria, Kokil's son and Harihar Sahu. Order was placed for the manufacture of the types they usually make.

Information regarding social and religious aspects of 'Jagor' making was gathered from the Sidhrias as well as members of other communities.

RAW MATERIAL

The main material used by the Sidhria community to make their product is brass. These may vary between bell metal and German silver. They do not extract the metals from local minerals. They procure broken pieces of bell metal or brass from professional dealers from Pallahara town or Khamar village. Some times the villagers sell their broken metal pots to the Sidhrias.

Besides brass and bell metal the Sidhrias need wood for the furnace, *shal* resin (dhuna), sesame oil, water and clay of various types.

There are plenty of trees around the villages which provide sufficient fuel for the furnace without much cost. Similarly the *shal* resin is collected by the Sidhrias from the forest free of cost. The sesame oil is purchased from the market. The cost of metals are, - brass Rs. 180/- per kg and alluminium Rs. 90/- per kg. Kokil Sidhria and his sons at present are getting support from Small Scale Industries, Orissa Government. They often take an advance from the S.S.I. for the purchase of raw materials. Some times villagers provide the raw materials and get the finished product after payment of labour charges. This charge vary from person to person on the basis of economic condition and necessity of the person.

TOOLS AND IMPLEMENTS

I. *Furnace and bellows* : Locally known as 'shal' and 'happor' respectively. The bellow is also known as 'bhati'.

The bellow is made of goat skin and deer skin. The Sidhrias never use 'bhati' made of cowhide. They use the bellow by hand they do not operate the bellow with their feet. At present government has supplied with a mechanical bellow which also is operated with hand. The furnace is a shallow pit of circular dimension with a depth of about 1 ft., scooped out in the floor of the hut. At Harihar Sidhrias house it is in a small extension of the main house. At Kokil Sidhria's house it is in a spacious shed on the opposite side of the main household. The furnace is kept clean and plastered smoothly with mud and cowdung. Broken pieces of pots are kept for the control of the flame. The fuel in the form of charcoal and wood is placed in the hole and air is blown into the burning furnace with the help of the hand bellow. One end of it is fitted to the base of the furnace, while at the other end a narrow bamboo is fitted.

2. *File* : Both small and big. These are used for filing off the dirt from the finished items and to give them a shiny look.
3. *Pincer* : Pincer is known as 'Sanrashi'. This is made of iron. There are both small and big pincers. These are used for holding heated mould in the furnace. this is bought from the local blacksmith.
4. *Hammer* : Hammer is known as 'haturi'. This is used for breaking of metal bought from the market.
5. *Chisel (chheni)* : Both big and small. This is made of iron. The chisels are for cutting pieces of metal. This is procured from the blacksmith.

6. *Polisher*: It is made of semicircular pieces of wood which is rubbed against the body of the brass object to give it a shine.
7. *Iron rod*: These are big rods with one end pointed. This is meant for breaking the burnt clay from the finished product.
8. Pots for heating the resin.
9. *Cloth for sieving the resin*: These are necesary for making resin wires.
10. *Stone anvil*: It is a circular and flaked piece of stone. On this the metals are broken and also the finished product is placed for filing and cleaning.
11. *Knife*: Iron knife for cutting the wires into size.

METHOD OF MANUFACTURE

There are several steps in the manufacture of brass objects.

The first step is for preparation of the wax. This consists of 'Shal' resin and sesame oil. In an earthen pot the resin and oil in a proportion of 2 : I measures i.e. resin 1 kg. and the oil 500 gm. are boiled over a slow heat. The mixture takes a dark colour. It is slowly sieved through a cloth over a pot of cold water. The mixture solidifies and hardens in the water. The solid piece of resin and sesame mixture is stored for future use. Over a slow fire the resin is softened and it is pulled into thin wires according to the need of the Sidhrias. The knife is used for cutting the wire into desired size.

The next step involves in the preparation of cast, also known as 'Sanch'. The *sanch* is made out of clay. Type of clay vary according to types of objects made. For the lampstand i.e. 'Jagor' lime rich clay mixed with sand is necessary. Termite earth is also used. The cast is dried in the sun. The outer surface of the mould is smoothed by rubbing with pieces of potsherds. This smoothened surface is further plastered with liquid solution of cow-dung. This layer is important because the resin will stay on this surface. The mould when dry is ready fixing resin wire with design and pattern on it.

This step involves the preparation of resin wire. The resin is softened by slightly heating. Then it is cut into smaller strips. Those strips were heated slightly over the fire and arranged lineally one after the other. Then it is further heated and stretched into fine threads.

The resin wire is then placed on the mould in a circular fashion. A series of circles are placed one after the other. Designs are made by pulling resin wires. Various kinds of traditional designs are made.

After the cast is completely covered by resin wire, a layer of clay paste is placed on the surface. The clay is prepared by sieving and mixing with chaff. A fine hole is left on one side of the mould. So that the wax is reached through the hole. A funnel is made out of similar kind of clay. It is fixed on top of the clay-covered wax model in a way that a small tip of uncovered resin thread of the mould is fixed into the hole at the base of the clay funnel. When the funnel is fixed at the top of the mould, the whole thing is dried.

The metal pieces meanwhile are broken into small bits and placed within the funnel and covered with a lid made of the same type of clay and dried.

The furnace is prepared by putting fuel wood into it. This fuel is covered by broken pieces of pot. The fuel is lighted. Fire is controlled by means of the bellows. When the fire is kindled the mould is put into the furnace. The funnel portion is placed downward. The Sidhria heats up the furnce by using the bellows until a blue flame is formed. It takes about half an hour for the metal pieces within the mould to melt. The funnel becomes red hot. The Sidhria by experienc understands the exact time to take out the mould. By means of a big pincer he turns the funnel side upwards and the mould downwards for a few minutes. The molten metal enters into the mould. Then the mould still held by the pincer is emmersed into an earthen pot filled with water.

After it is sufficiently cooled, outer clay covering is broken by means of the iron rod. It is found that the metal solution have come down into the 'sanch' and had filled in the gap between the two layers of clay left by the molten resin wires. The mould is further cooled by pouring water and the clay is scooped out.

Finally the metal pot is cleaned by filling and rubbing with the polished piece of wood.

TYPES OF OBJECTS MADE

1. *Jagor* : These are lampstands locally known as 'Jagor'. They make various types of lampstands :—

(a) A single lamp standing on the back of an the elephant.

(b) A single lamp standing on a pedastal on the back of an elephant.

(c) Five small lamps standing on a decorated stand.

(d) A single lamp standing on a pedestal.

2. *Measuring bowls for grains* : These are local measuring bowls for paddy and rice. There are particular sizes for the bowls. The most commonly known size is called 'Maan'. One 'maan' holds about 250 gms of grains. A very small type is made for measuring oil. The bowls are decorated at the mouth and at waist with floral designs.

3. *Rounded box types with lid* : These are meant for keeping betel nut during Lakshmi Puja. The lid is decorated by flat leaf like designs.

It has been found after investigation that at early times the Sidhrias made ornaments such as :—

1. Heavy bracelets, known as 'Jhinjhri'.
2. Bangles known as 'bala'.
3. Eartops known as 'Mundara'.
4. Anklet known as 'Payari'.
5. Rings for toe known as 'Gadomutti'.
6. Necklace known as 'Sike'.

The above mentioned ornaments were also made by similar method described above. The advent of cheaper factory made ornaments had lessened the demand for the Sidhrias' brass ornaments. The craftmen have either given up the manufacture of the ornaments or some had shifted to gold work.

RELIGIOUS ASPECT

The religious aspect is very important for the study of Sidhria community. The items made by Sidhrias has got a connection with the ritual activities. The 'Jagor' or the lampstand is necessary for religious activities, such as, daily lighting of the lamp in the evening near the household deity. The boxes for betelnut is needed during Lakshmi Puja. Above all the images of Lakshmi, Ganesh, Bishnu and other Gods and Goddesses, meant for household worship, are made by the Sidhrias.

The Sidhria worship God Bishwakarma. They keep their utensils near the furnace. Clean the workshed and worship the God. They do not work on that day. They have festivals which are very similar to the local Hindu festivals in the region. Specific festival which is specially meant for the Sidhrias of Pallahara is that of visiting the holy place at Kundaisara village. The place is held holy by the Sidhrias. The Goddess of this place is called 'Pratyakshma Devi'. A shiva temple at Tibir village also is sacred to the Sidhrias. For any kind of social and ritual ceremony they visit these two places.

MARKET FOR SELLING

The Sidhrias manufacture the brass objects after the monsoon rains are over in September-October (Kartik) and continue upto summer months, May, June (Baishakh and Jaisht).

They sell their ware in village fair and the weekly market. The nearest markets are at Pallahara, Kala and Khamar. They also peddle their ware in neighbouring villages. Sometimes as far as 30 kms away. People of Jhimripali go to Khotunga and Amga relatively frequently. Maximum demand is in winter months, i.e. Magh and Falgun upto 'Baha' festival. During this time harvest is over and marriages are arranged. Among local people, the Chasa, the Oriya and others the brass objects made by Sidhrias are requisite for ritual and festivals.

The Sindhrias are scattered in a number of villages in the neighbourhood. Some of the names as found from the informants are given below :—

Borkudor, Gurabondho, Charan, Bariposi, Khamar, Burbura, Athmol and Telkoi. The authors enquired into the presence of Sidhrias in Kanjipani (Kuanr) area. Such villages are Suakati, Jhupra, Jothalpur, Deshpur, Chatkaposhi, Pongachira, Chingrimunda, Singipur, Muktaposhi, Patharkhumba. The Sidhrias are at present agricultural labourers. Only a handful still practise the traditional craft.

CONCLUSION

Change is an incessant process in any society. Modernisation has changed the demand of brass objects in general. The grain-measures, lamp stands and images of gods are still in demand for religious reasons. The ornaments are no longer in demand and are not made anymore. New objects like laddles are recent addition. The authors have made investigation about the types of objects Sidhrias made in different generations.

In Jhimiripali Robi Sidhria, aged 25 years, is very famous for his craftsmanship. He makes the grain measures, betel nut containers, lampstands etc. Robi's father Kokil made similar objects. Kokil's father, Bhabo, remembered by Kokil, used to make bangles, anklet, eartop in addition to above mentioned objects. Bhabo's father, Muthira was famous for making women's ornaments such as eartop etc.

Gunthu Shahoo, aged 65 years makes images of Lakshmi-Narayan and Radhakrishna, Jagor and Mano. He also made anklets for women. Gunthu Shahoo's father Budhia Sahoo used to make anklet, bangles and necklace. Gunthu Shahoo did not meet his grand father.

It is apparent from the present work that there was an overall change in the craft. The Sidhrias have abondoned their traditional craft and have taken up new means for economic survival, such as agricultural labour, masonry work and gold smith work. Even demand for some of the brass objects have completely dwindled.

Present work is an approach for reconstruction of some cultural traits by means of parallel. It can be said that the ornaments collected from the chalcolithic site at Kuanr perhaps were made by the same methods as the Sidhrias'. None of the bangles is a complete circle but it is open at one end. The description of the ornaments made by lost-wax process by Sidhrias suggest what might have been the method for manufacture of ornaments found at Kuanr. Further intensive work among the Sidhrias may throw proper light for understanding of the prehistoric brass-working in the region.

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Role of Anthropologist in Environment Education.

USHA DEKA

Abstract : Today the environmental degradation has become very intense and also extensive It has caused alarm among a great number of environmentologists. The air of the most of the metropolitan cities are polluted with toxic fumes and suspended particles, which have caused increase of respiratory disorder, most of the Indian rivers are polluted by the industrial toxic waste The swamps are vanishing and wet lands are disappearing. Forest cover is dwindling. The population growth rate is not brought down to the required level.

The best strategy for checking environment pollution to motivate the people of all level to fight agianst it Environment education of the mass is one of the means to try to check pollution The people should be made aware of the ill effect of the unlimited application of the modern technology The advantage of small scale sustainable development projects should be more highlighted in all sphere. Ecofriendly development projects should be encouraged

ENVIRONMENTAL DEGRADATION

Anthropology is the youngest of all sciences. Most fundamental scientists will try to neglect Anthropology as it deals with every aspect of human being. But as the science deals with man, anthropologists can understand easily the human being in a particular social set up.

Interdependences of Man and its environment are very complex. Man is exploiting environment from the beginning of human development and environment is modifying man. The whole history of biocultural evolution of Man is interwoven with exploitation of natural resources. Continuous and over exploitation of natural resources are bound to create a scarcity of natural resources. This situation may lead to extinction of plants and animals.

Man started using natural resources from the beginning of history. Though physically man seems to be most defenceless animal, it has been able to damage the environment to highest degree. The ecological balance of different biosphere has been disturbed by industrial and technological development. In the primitive hunting gathering stage man did not use so much of natural resources. Gradually as the population increased and technology improved, more and more natural resources were used. The interference with environment pollution increased. These interferences resulted in reduction of marine life, reduction of wild animals, reduction of forests etc.

Since seventies, a large number of persons became cautious of disturbing the ecological balances. In U.S.A. in 1973, alarm was raised because of reduction of bird population, reduction of marine sea food, increase of DDI in the crops, increase of chlorinated hydrocarbon in the atmosphere and increase of air pollution.

In India, attention was drawn to gradual deterioration of ecology since 1980. The situation in India may not be as severe as U.S.A. or other industrially developed countries. Studies have revealed that gradually air and water are becoming more and more polluted.

Industrial society, provides a large number of facilities for better living condition. The quality of life appears to be improved in Urban area. But technological development has improved the crop harvest. For better crops, manure and insecticides are used, water is supplied by irrigation. The insecticide penetrates in the subsoil water and subsoil waterlevel becomes lower and lower. Recent survey has shown arsenic poisoing in few districts of West Bengal and several districts of adjacent Bangladesh.

One of the factors responsible for environmental degradation is population growth. But this does not acquits the developed nations for creating industrial waste and interfering with the environment.

Our main environmental Problems are :

1. Reduction of forest cover; mainly the rainforest,
2. Increase of air pollution,
3. Increase of water pollution,
4. The greenhouse effect and global warming, and
5. Disturbance in the topography of regions.

In the whole world, the poorer nations (Mostly in South Asia and South America) still possess some rainforests. But these are gradually reducing in size. The richer and technologically developed industrial nations now would like to put an embergo on the poorer nations. The rich nations are using more energy resources, releasing more of Co_2, CFC and industrial waste. These pollutions cannot be restricted to only one area. The world is divided into north and south block or developed and developing nations. These two blocks are blaming each other for more consumption of energy resources and creating a "catch 22" situation. One class has more per capita consumption and the other has more total consumption due to high population growth rate. In this contest, who is responsible for this condition is not important because pollution of sea and air, ozone depletion, global warming and greenhouse effect cannot be restricted to one area. These gradually spread to other area and the whole world will face the consequences.

The amount of deterioration in the environment at the global level today would raise several questions to the modern man "How much resources should be utilized for development of the country without damaging the environment? How much industrialization is the standard of development? How much is too much? Are we marching towards doomsday by degrading environment?"

SUSTAINABLE DEVELOPMENT

The only alternative which will ensure development and nondegradation of environment is the sustainable development. The carrying capacity of a region should be taken into account before preparing a development plan. This concept is not very foreign to us. Here the main idea is to preserve the ecobalance and biodiversity of a region and also develop the region on the basis of available resources.

For the countries with high population growth rate, the growth rate should be lowered down so that the natural resources can be preserved.

In this concept, the main idea is not to exhaust the resources but to conserve the resources for the future generations. Developmental plans should be prepared according to the need of the people of this generation as well as the future generations.

In the recent past, migrations from rural to urban areas have increased manifold because of better income potentialities. But the urban areas are not able to provide certain basic essential amenities to the migrant population. Had there been sufficient opportunities for these people in their native places they would not have migrated. It is not possible to provide uniform developmental programmes to all regions but no area should be neglected.

SUGGESTION FOR BETTER ENVIRONMENT

Here, I would like to mention that development of a nation is measured by the average energy consumptions. At present the developing nations are trying to use more and more nonconventional energy.

There are two types of energy :- Renewable and Non-renewable.

Non-renewable energy sources include coal, oil and natural gas, nuclear energy and geothermal energy.

Renewable energy include animal energy, biogas, biomass, hydropower, ocean energy, solar energy, urban waste and wind energy.

Among the nonrenewable energy coal is the cheapest but it creates more pollution by releasing higher amount of Co_2.

All the renewable energy sources do not produce any waste and also do not pollute the environment. Only power plants are to be constructed for production of power.

I would like to suggest the following for creating better environment and less of pollution.

1. Emphasis should be more in using renewable energy source.
2. Instead of coal based thermal power station, more and more natural gas based power stations should be erected.
3. Steps should be taken to ensure reduction in the emission of CFC and other greenhouse gas. The government should be vigilant in this aspect.
4. Vehicles should be penalized for exceeding the emission level of air pollution.
5. There should be stricter monitoring of the industries by various Pollution Control Board so that they do not pollute the environment.
6. In India, unprofitable life stock population is more than necessary. These should be reduced.
7. The growth rate of population should be reduced, so that the developmental projects can really benefit the people.

8. Stricter vigilance should be maintained in the forests, so that deforestation does not occur.
9. More emphasis should be on plantation of forests. Afforestation should be given priority in all the regions.
10. The people in all over the country should be made aware of the condition of environment deterioration. Emphasis should be given on environment education in rural and urban areas to people of all ages.

ENVIRONMENT EDUCATION

It is clear that there is urgent need to change the human activities to prevent catastrophe in the biosphere. Scientists have seen the effect of technological progress in shortage of energy, raw materials like food, water, land and air. At the same time excess of wastes are piling up polluting the environment. Public awareness is growing fast about the environment degradation. It is high time that people all over the country should be more aware and cautious about the environment degradation and environment management. This can be done through formal education in countries where literacy rate is quite high.

In the First international conference on Environment Education held at New Delhi in 1981, it was declared that environment education is necessary to help "arouse social consciousness and make community aware of the fact that the good of the individual and that of the community are both harmed by ecological disruptions".

Environment Education through formal schools or other institutions will reach only a section of the people. It will not reach the majority of Indian villagers. The main objective of environment education is to develop awareness and impart knowledge, so that the people can solve environmental problems. It is holistic in naturre. This education is to be imparted to the whole population, men and women, young and old, urban and rural and also the planners and policy makers.

In India, the population is diverse in nature. They differ in religion, custom, technological level etc. The environment also varies widely. Therefore a general environment awareness will not help in solving the local environmental problems. Mass movements and involvements of the whole population in environment education only will ease the situation.

Water in the natural state is supposed to be pure. But today even in the Himalayan Mountain range, pure water is not available. Water is polluted by all types of industries, including small/ cottage industries. Following industries are liable for water pollution-Fertilizers, Brewaries, Textile mills, Oil refineries, Sugar, Alkali, Chemicals, Pesticides, Petrochemicals, Pharmaceuticals, Thermal Power station, Tanneries and Dairies.

These industries usually discharge their wastes in adjacent water sources. It is essential for the industries to have own waste treatment plant to eliminate the harmful element. Usually industries under small scale or cottage sector do not have any waste treatment facilities. The public should be more aware of these facts.

Air is polluted by human habitation, fuel combustion, industrial combustion, vehicular fume, industrial fume etc. Industries should use air purifier before releasing the fumes. The ordinary citizen is not aware of that there are several laws enacted in different states for prevention of air and water pollution.

ROLE OF AN ANTHROPOLOGIST

The anthropologist has an advantage in the field of environment educational research. The anthropological approach is mostly holistic in nature. The anthropologist can visualise the chain reaction of changes brought in a society and its various cultural traits.

Along with the holistic approach the anthropologist deals with small population groups with their own cultural identity, special value system. They form seperate small units but also maintain relation with outside world.

The highest advantage of the anthropologist is that the field and the people are their own laboratory. They are well equipped to move about in the field and study the people and their special needs for maintaining better environment and participating in development projects. The anthropological tools for research will also facilitate better mode of communication between the public and the scientists.

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